Hints on Grape Culture.—III.

HAVING selected a proper site for the vineyard, and examined the nature of the soil, it becomes important next to prepare it for the reception of the vines by some thorough mode of preparation. There is, naturally enough, some difference of opinion as to what should be considered a thorough preparation of the soil, what is esteemed good preparation by one being regarded by another as very indifferent work. We may say, however, that all experienced vineyardists are agreed that the soil should have some considerable depth, and be properly enriched. The results will correspond with the preparation. We have already insisted that moisture in excess should be got rid of by underdraining or otherwise, the best mode of doing which will be considered in a chapter by itself; we shall also treat separately of *manures* and *composts;* the present article, therefore, will be confined to the mechanical operations necessary in preparing the soil.

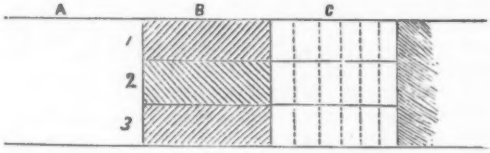
The *depth* to which the soil is recommended to be prepared by different writers varies from almost nothing to *five* feet or more. We very much doubt the necessity of preparing the soil to this great depth, except under very peculiar circumstances; insisting upon such needless extremes, moreover, has proved a great drawback to a more general cultivation of the grape as a source of profit. We always insist that all work in Horticulture shall be done in the most thorough manner, but we have no faith in works of supererogation; and there is nothing in our experience or convictions to favor these excessively deep borders; on the contrary, we believe them to be, as a general thing, an evil, in as far as they are not indispensable to the health and fruitfulness of the vine, and their great cost frightens the great mass of people from the cultivation of the grape at all. The point we make is this, that borders five feet deep are not in the least necessary, under ordinary circumstances, for the production of grapes of the very best quality. We shall show, hereafter, that the roots which make the best fruit are usually about four inches beneath the surface, and it is quite possible to keep them there. We, notwithstanding, consider a reasonably deep border quite necessary, not only for the health and longevity of the vine, but to counteract the disastrous effects of drought, and heavy, long-continued rains. On this point, our general rule is, *maximum* depth, *three feet; minimum* depth, *eighteen inches.* There may be occasional exceptions to this general rule, but the nearer the approach to our *maximum* point, the more satisfactory will be the results.

Some soils will require more mechanical manipulation than others; as, for example, a stiff clay will need to be more thoroughly stirred and broken up than a sand or light loam. Both, however, should be worked and enriched equally deep; the capillary powers of both should be made as nearly equal as possible. The labor of accomplishing this purpose, however, will be much less in the one case than the other. What we wish to impress upon the reader is this, that *thorough preparation* is indispensable, no matter what the nature of the soil may be.

There are two modes of preparing the ground: the one is called *trenching*, the other *subsoiling;* the first being usually confined to the garden and small plots, and the latter to the vineyard or field. Subsoiling is a less perfect mode of trenching, and is a cheaper and less laborious operation. Trenching is performed by the

spade; subsoiling by plows of different kinds. In all preparation of the soil, the nearer it is brought to the condition of trenching, the better.

We shall first describe the operation of *trenching*. This, though quite a simple operation, and well known to the gardener, is very imperfectly understood by the great mass. We shall endeavor to make it so plain that all may comprehend it. We will take, for example, a piece of ground to be trenched three feet deep and six feet wide, of which the figure appended is a section, on a scale of a quar-



ter of an inch to the foot. A, B, C denote the surface, B, C being divided into two equal parts of three feet each. The figures, 1, 2, 3, denote the feet in depth. Begin by marking off with a garden line the section B, three feet wide, along the length of the border; then remove the earth from B to the depth and width of three feet, as shown by the shaded lines, and throw it upon A. We now have a trench three feet wide and three feet deep the whole length of the border. The next operation is to transfer the earth of the section C into the trench B. This is done in several ways. The usual practice is to take the top soil, indicated by the figure 1, and place it in the bottom of the trench; on this is put 2; and on the top of all 3. The effect of this is to place the best soil at the bottom and the poorest at the top, to which there are some serious objections. A better way is to take small sections from top to bottom, as indicated by the dotted lines, which has the effect of thoroughly mixing the soil, and making it of uniform texture throughout. While the operation of trenching is going on, the compost must be mixed with the soil. Though we have shown only two trenches, the operation is to be continued by marking off three feet more and throwing it into C, and so on till the work is done, the earth thrown out at A being used to fill up the last trench. If the trenching is to be two feet deep instead of three, the operation is substantially the same, as will be quite apparent. A good plan, in trenching two feet, is to loosen up a third foot without throwing the earth out.

We usually, however, pursue a method somewhat different from the above. Spring a line and mark off a trench four feet wide. Then begin by digging a hole four feet wide and six feet long, throwing the earth out on the side not to be trenched. The operation is continued by cutting down the earth from top to bottom, (as indicated by the dotted lines in the figure,) and placing it at the end of the hole just made. The operator stands in the trench; and as he works before and throws the earth behind him, he always has sufficient open space to stand in. The sides of the trench must be kept perpendicular. When the end of the trench is reached, another, four feet wide, must be marked off parallel with it. The unfinished end of the first trench is then filled in from the second trench, and the latter is worked along like the first, and so on back and forth to the end, when there will be a hole, about four feet by six, to be filled up by the earth thrown out at the beginning. The trenching may be begun by a hole of any convenient size. Some of the advantages of this method are, that the men (part in the trench and part out) can labor to greater advantage; the earth is more thoroughly pulverized

and mixed, and the compost more completely and easily worked in; and there is little wheeling of earth.

We will now describe the other mode of preparing the soil, called *subsoiling;* and we again remark, that in this operation, the more nearly the soil is brought to the condition produced by trenching, the more satisfactory will the result be. The implements to be used are the common plow and the subsoil plow. For heavy soils and sod, the Michigan plow is a good one; for ordinary soils, the improved Eagle and the Knox plows are efficient implements. Of subsoil plows, the Lifting Subsoil is the best. For side-hill work, a left-handed plow is best, unless the off-hand ox should be a very tractable animal. Different individuals, however, have their preferences in the matter of plows, and each may indulge his preference, provided the work be well done. What is wanted is a surface plow that will turn and mix the soil a foot in depth, and a subsoil plow that will stir it at least a foot more; the deeper the better. The compost is first evenly spread over the surface. The surface plow is then to be put in, and the subsoil plow is to follow it immediately in the same furrow. In preparing a vineyard it is desirable to avoid dead furrows; and this is done by turning the furrows all one way, which involves the necessity of returning without a furrow. Unless this is done, it is better to plow around the lot than in "lands." To enrich the soil deeply and thoroughly, it is a good plan to have a cart follow by the side of the first plow, and throw some compost in the furrow, in front of the subsoil plow. If the plowing is done in the fall, the land should be left rough, to be acted on by the frost. If in the spring, and it is not intended to plant at once, a hoed crop may be grown with advantage. Where the time and labor can be afforded, the land may be plowed and cross plowed two or three times with decided benefit. The object is to get the ground into as fine tilth as possible. The best implement that we have seen for pulverizing and mixing the soil is Mapes's Digging Machine. This, run through the soil once a fortnight during the summer, will reduce it to the fineness of good garden soil. The best harrow to use is one with "cultivator" teeth.

Side hills, if very steep, will have to be terraced by manual labor. The terracing may be done by cattle, however, more cheaply in all other cases. The ordinary side-hill plow is not stout enough, works too shallow, and mixes the soil imperfectly. A narrow, deep left-handed plow is probably the best thing that can be used in terracing. The furrows must all be turned down hill, the plow returning in the same furrow. There will always be some finishing to be done by hand. The walls may be made of stone or sod; on steep hills, however, stone walls are quite necessary. We are trying a new plan, which we think will save no inconsiderable labor, but have not progressed far enough yet to speak confidently. We aim at the same object in terracing hillsides as elsewhere, the formation of a deep, well-prepared border for the vines. The work presents more or less difficulties, according to circumstances; to describe fully the process of forming the terraces would require an article of itself. We have indicated pretty clearly what is to be accomplished, and hinted at the best mode of doing it. We are ready, however, to give any further information that may be asked for.

The reader must remember, that in preparing a border or a vineyard, he is doing something, not for a day or a year, but for a century, and the preparation must be correspondingly thorough. We put corn and potatoes in the ground, and in the short space of a single season enjoy their full fruits, the process to be annually repeated. We plant a vine, and, provided it be well planted and wisely cared for, generations unborn may partake of its luscious fruit.

LANDSCAPE ADORNMENT, NO. XI.—ORNAMENTAL WATER.

BY GEO. E. WOODWARD, CIVIL AND LANDSCAPE ENGINEER 29 BROADWAY, N. Y.

THERE is nothing in the whole range of materials made use of in Landscape Adornment that is so effective, attractive, and beautiful as water, and wherever it can be had at a reasonable expenditure, it may be considered as adding to the value of property beyond most other recommendations.

Water, in the natural form of Lakes, is not so frequently met with as to afford all an opportunity to enjoy or display it; and if desired, it becomes necessary to imitate nature in this respect, wherever she has given us the hint to do so. In the natural style of Landscape Gardening, artificial water, either in lakes, ponds, or streams, requires a treatment entirely different from that prevailing in the old school; regular forms must be entirely disregarded, and we must pursue our studies among the picturesque forms of nature. There is that which requires an intimate knowledge of natural forms, as well as natural effects—a pretentious imitation being worse than that which plainly shows, both in design and construction, there is nothing natural about it. If we take as models of study the most graceful or the most beautiful natural examples of lakes, and attempt their reproduction, we would be early convinced that any exposure of the manner by which we arrive at results would be fatal to success: the art by which we attain our wish must be concealed, the well-finished masonry being no compensation for a pebbly beach. Perhaps the most difficult part to be attained in the formation of water in the natural style, is the shape or figure. The contour or boundary lines must be such as will show no repetition, and must also create the impression that they have been produced by the wash and wear of time. There is also another impression to be created, and for which we can call to our aid a numerous variety of natural examples. This last is extent—the ability to make the most of what can be had—to double the apparent size. It is a well-known fact, that we cease to take an interest in anything that the eye commands at one view, and which, if viewed from different points, presents no change or variety. There should be a temptation to investigate, and in all changes a new vista be opened, or a new picture presented. We should therefore so contrive the form of water, that in no one or even two positions that could be taken, should its entire outline be seen; and this can readily be done by irregular shapes of water, and which are made irregular by the very objects that we introduce to intercept the sight. If a point be high, that will answer our purpose; if low, we must plant. The introduction of an island is sometimes of value, not only as a pretty feature, but as the means of concealing views beyond, which are more beautiful seen from another stand-point; whatever is defective must be covered up, and all that is beautiful be plainly shown.

Being familiar with all natural shore-lines, and the action of water upon them, the first step towards their reproduction is to ascertain what forms are most applicable and the least expensive. We must therefore know the natural shore-line that would be indicated, by flooding the site of the proposed pond with water, if the pond be raised. This can be ascertained with the utmost accuracy by a topographical survey; that is, the level of the proposed surface of water being given, the outline of the shore can be indicated by a leveling instrument, and all the points and indentations marked out: when this is done, the shore-line thus found is to be meandered either by a compass, or transit, or by measuring offsets from a base-

line, or from parallel lines. The plan of the pond, as it will naturally form, is then to be plotted, and we have an exact representation of its shape on paper. This being done to a scale, enables us so to vary the outline as will introduce the most pleasing variety, and the changes thus made on paper can be measured off by the same process on the ground. It is sometimes advisable to make two or three such examinations—say one at one foot below, and another one foot above what appears to be the best level for the surface of the water, as it is a very common occurrence to find suggestions of beauty in a survey thus plotted, which, on the ground, the eye has condemned. Having the outline of the proposed pond transferred to paper, with two or three different outlines that may be suggestive of other good forms, it enables us to study out, on our library table, the merits and demerits of the case. It is also desirable that surrounding objects, such as rising ground, trees, etc., be placed upon the plan. Then, from different points of sight, lines should be drawn, diverging from the eye, and embracing all that is desirable to be shown. By this process can be indicated the position of intervening objects, and it will show, when the work is done, the limits of a view from any point. In addition to a plan, several profiles of the bottom should be taken with a leveling instrument—one or two lengthwise, and perhaps three or four across; these will show exactly the depth of water at all the principal points, and from them can be estimated what amount of excavation shall be required to make the pond deeper, if greater depth be necessary. It must be evident, that a survey of this kind will show the outline of the pond when flooded, and the profile, the soundings or depth of the water at the required points, and all this can be ascertained with reliable accuracy, without meddling with the water. It may prove when a meander is plotted that no alteration is necessary, or it may show that very great changes can be made by a very little work. It will always show how the most beautiful effects can be produced, and the best and most economical manner of producing them. Where a pond is created by excavating the earth, instead of flooding it, a somewhat different process must be employed; the meander then to be made would inclose that surface which would be the most economical to remove, embracing, perhaps, the low, wet ground that winds around or is hemmed in by the hard land. From this plan could be studied all changes necessary to give a handsomely indented shore, or a pleasing variety of views.

As the natural style of Ornamental Water does not contemplate the use of masonry, either laid in cement or laid dry, except where it is all concealed, it must consequently be considered as out of keeping if exposed. Masonry is necessary in constructing durable dams, and we may as well state that where used for this purpose the arch should be sprung against the water, or curved up stream in such a manner that the water presses against the back of it; if curved the other way, as is sometimes done in making oval ponds, there is nothing except the mere strength of the wall to resist the pressure, and it is likely to be carried away in a flood. This wall, by which the water is retained in the pond, may be entirely concealed by an embankment of earth, which may be made wide, and planted in such a manner as to destroy all artificial appearance. Flooded ponds, as a general thing, hold the water, and there is no leakage through the bottom. Those that are excavated may expose a bed of gravel, and the water percolate and pass off; to remedy this, and all other cases where the ground will not hold a body of water, the bottom should be thoroughly puddled, that is, lined with well-kneaded clay, or clay and sand worked together until they are impervious to water; this should be well rammed, and of a depth of not less than six inches, and on very bad bottom should be more. Strong loam, or any tenacious earth, well prepared

by puddling, or beating in water, is said by Mr. Downing to be as impervious to water as clay, and may therefore be used for lining the sides or dams of bodies of made water, when such materials are required. The edges or shores of a pond thus treated are more beautiful, and practically as durable as masonry. They should gradually grow deeper from the shore-line; if abrupt, the frost will crumble them down, and children and cattle are more likely to tumble in. The beach may be graveled, or, if preferable, the lawn may run to and underneath the water.

In formal ponds, whose outlines are regular, and require to be carefully kept so, it is necessary to have a wall around them; they are more beautiful, however, if the coping be left off, and the sod carried over to the face of the wall. Unless these walls be strongly built, the frost is very apt to heave them; they are like retaining-walls, or terrace-walls, having the earth on one side up even with the top, and should be carefully avoided in all that appertains to the natural style of Landscape Adornment.

PRACTICAL THEORY OF FERTILITY.

BY BENJAMIN AYCRIGG, PASSAIC, PASSAIC COUNTY, NEW JERSEY.

The chemical condition of a soil necessary to fertility (when reduced to its lowest terms, after separating the adventitious by means of a comparison of the reports of a great many analyses of soils, and of plants, and experiments with various fertilizers) appears to be this: The soil must contain silica, alumina, peroxide of iron, lime, magnesia, potash or soda, humic acid, and at least one of the three mineral acids, viz., phosphoric, or sulphuric, or muriatic. Also, there must be no salts of the heavy metals; also, the alkalies must be balanced with the acids, so that neither shall be in excess, thus making the soil exactly neutral.

The reduction by chemical equivalents of a great number of analyses of soils reported, both good and bad, has proved to me that *neutrality* is the most distinguishing characteristic of a fertile soil for ordinary field crops. This neutrality can be produced and made permanent without a previous analysis, without danger, at the smallest expense, and with exact precision, by pure lime, (or such as contains no magnesia,) in excess of all the acids in the soil. At the same time, this excess decomposes all the poisonous salts of the heavy metals, and makes them valuable fertilizers. It also liberates potash, and soda, and phosphoric acid from their compounds. The remaining excess of lime becomes a carbonate, as chalk, laid by in store; neutral and inert while not required, but still ready to neutralize any future increase of acid. Pure lime is the only substance that can be used artificially to produce these results. In natural soils this neutrality is produced by any of the four inorganic alkalies.

The above chemical conditions necessary to fertility can be produced by the five following simple, cheap, common applications, provided the ground be a fair *loam*, (or mixture of *sand* and *clay*,) and contain the ordinary amount of iron in any soluble form, although at present it may render the land barren by its poisonous condition as sulphate or phosphate. The proper quantities of the various applications must evidently vary according to the present condition of the soil. These can be ascertained by each culturist for his different grounds, by varying the amounts and noting the results. As a preliminary experiment, I suggest such

quantities as I suppose will answer where the same substances are deficient in the soil, and at the same time not produce injurious excess where they are abundant at present.

1st. *Pure Lime in Excess.*—One large application, to make an artificial limestone soil as a basis of operations, say 200 bushels per acre for ordinary land, and thence increasing, with the vegetable matter in the soil, up to 1,000 bushels or more for a drained swamp. The only danger in this application in excess is from magnesian stone lime. Shell lime is pure. A bushel measure means slaked, struck.

2d. *Magnesian Stone Lime.*—A moderate quantity as food, every three or four years, say 50 bushels, and not to exceed 150 bushels, even for rich land.

3d. *Gypsum* (plaster).—To supply sulphuric acid, say three bushels every three or four years; otherwise, twice as much "salt-cake."

4th. *Common Salt.*—To supply chlorine (muriatic acid) and soda, say six bushels every three or four years.

5th. *Decomposed Vegetable Matter.*—If in the form of barn-yard or other fermenting manure, it should not be applied within some months, either before or after fresh lime. An excess of fresh lime will expel all the ammonia from fresh manure, or any other ammoniacal compound, as guano, etc.; but if the vegetable matter be in the form of muck, or mud, or sods, or pumice from cider-mills, or rotten wood, bark, tan, or sawdust, then it should first be composted with lime to neutralize the acid before it is applied, unless it be for acid plants, as strawberries, cranberries, etc., where lime is said to be injurious, although necessary for field-crops and for fruit-trees.

Three of the inorganic constituents of plants are not supplied in the above, on account of the expense, viz., manganese, potash, and phosphoric acid. They may all be abundant, even in a barren soil. They may all be liberated and brought into use by the excess of lime; or they may all be absent. In this condition we have evidence that we can have fertility without them. Thus manganese does not appear to be necessary when there is an abundance of iron. Potash is at times replaced by the other alkalies, lime, magnesia, and especially soda, which is almost identical with potash in its chemical action. Soda we apply in common salt, and also in salt-cake. Phosphoric acid is at times replaced by the other acids, (in a great measure at least.) We have humic acid in the vegetable matter, sulphuric acid in gypsum or in salt-cake, and muriatic acid (chlorine) in common salt.

It is, doubtless, better for plants to have a supply of every thing; and after the cheaper substances have been fully tried, then apply the more expensive fertilizers, and ascertain whether the increased fertility will pay for the increased expense. But in many cases they will now be found useless. Thus, the benefit from wood-ashes, soda-ash, potash, fresh manure, Peruvian guano, is frequently due solely to their alkaline action in neutralizing an acid soil well supplied with inorganics. This neutrality has already been produced by lime. So, again, where the soil contains sufficient phosphoric acid, the superphosphate of lime will have no effect, since gypsum gives us lime and sulphuric acid, the other two ingredients in superphosphate of lime.

For a partial improvement, magnesian stone lime is better than shell lime. It is cheaper per bushel, still cheaper per pound, and much cheaper in proportion to effect, since magnesia is more powerful than lime as 4.83 to 3.50. At the same time, it also furnishes magnesia as a food preferred by some plants. Thus the grain of Indian corn contains ten of magnesia to one of lime; but it can not be

used freely, since an excess of burned magnesia will render the land permanently barren from excess of permanent alkali, unless counteracted by some acid, as fresh muck or old manure. Pure lime, on the contrary, soon becomes "mild or carbonated, as chalk, when freely exposed to the air, and hence may be used" in almost unlimited quantity, without any permanent injury. It is only a waste of money and a waste of time until the large excess becomes mild.

The proposed excess of caustic lime will be advantageous in an open field, to kill off all plants, including weeds, and thus prepare it for the new crop as soon as the lime shall have become mild; but it would also kill trees, and render a garden useless for a time. Therefore, in these cases, we can not use the excess necessary to decompose minerals, and must confine the liming to the sole purposes of producing neutrality and of supplying food. This may be done by frequent small applications of fresh lime, or by one large application of carbonate of lime in the form of shell marl, or ground shells, or chalk, or old mortar, or old walls, or scrapings of limestone roads, or rotten limestone, or pure lime exposed fully to the air until, when stirred in water and allowed to settle, the water does not taste of lime.

The organic constituents of plants, or those elements originally derived from the air, are carbon, nitrogen, hydrogen, and oxygen. In fresh manure, ammonia is in excess, from the decomposition of the nitrates contained in the food. But after these have been exhausted the manure rots down the same as muck, etc., successively into ulmic, humic, geic, crenic, and apocrenic acids, (garden mould,) composed exclusively of carbon, hydrogen, and oxygen in different proportions. At each step, the air is decomposed; the nitrogen joins with the hydrogen of the earth acid, forming ammonia, while the oxygen joins with the remainder of the earth acid and forms carbonic acid gas, when the earth acid drops to the next grade. Hence a good supply of the roughest vegetable remains will for a long time furnish ammonia, the most valuable and evanescent ingredient in Peruvian guano. This ammonia from muck, on the contrary, forms most when most required, increasing with the heat of summer, becoming quiet in winter, to be aroused the next season for the next crop. I have no positive authority that the air is exactly thus acted on, but I give it as an hypothesis that will explain the power of humus to "*absorb*" ammonia from the air, and at the same time account for the various chemical transformations among these earth acids that do not appear to be agreed on among chemists. Thus Liebig says, "The humic acid of the chemists is the product of decomposition of humus by alkalies. It does not exist in the humus of vegetable physiologists." Now, I found that a specimen of soil taken from a hedgerow, and composed mostly of rotted sods, and very prolific in sorrel, would neutralize 19,000 lbs. of slaked stone lime, if this soil covered an acre of ground eleven inches deep, while the same amount of soil, imperfectly burned, required but 3,000 lbs. Thus there is in this soil a vegetable *something*, capable of neutralizing 16,000 lbs. of lime per acre.

I propose to the horticulturist to try the experiment whether muck neutralized by lime will not answer in place of guano. If so, he will not care whether wood rots down into humus or humic acid; nor yet whether ammonia is thereby collected *from* the air, or formed by decomposition *of* the air. Again, we might infer from Liebig that decomposed vegetable matter is not necessary. His argument may be sound, but I prefer to imitate the fact, that decomposed vegetable matter is invariably reported in all fertile soils, although it may be the consequence, and not the cause, of fertility.

Again, some of the most intelligent and scientific culturists object entirely to

the use of magnesian-stone lime. If they are right, the second application should be replaced by pure lime, since an occasional liming is found beneficial, even on rich limestone soils. I have seen land rendered permanently barren by magnesian lime, but only by excess. I have also seen whole districts raised to fertility by its use, and have used it largely myself in Pennsylvania, where they do not exceed 25 bushels per acre for poor land, and 50 bushels for rich land. They calculate fresh heaped measure. This would make about 75 and 150 bushels slaked, struck.

The chemical proof of the above would occupy more space than you can devote to any one subject. The best proof is a practical test by a few judicious culturists. This they can do on a small plot, and ascertain whether it deserves the name of theory, at a very small part of the labor that it has cost me to collect and analyze the facts upon which it is founded. If true, it is important; if not true, let us have the objections, that something better may grow out of it.

[The above is from the pen of a gentleman well known in the scientific world; an original thinker, and a pains-taking experimentalist. The article itself is an admirable specimen of condensed thought; there is not a superfluous word in it. The theory propounded conflicts in several material points with that of Liebig and others, but is sustained, in our opinion, by many facts and probabilities. It will no doubt bring forth a response from some of our readers. We would direct special attention to Mr. Aycrigg's suggestion in reference to the experiment with muck. We venture to say that the result will surprise many. We have not a doubt that vegetable matter is a source of fertility, Liebig to the contrary notwithstanding, and a very important one. Let Mr. Aycrigg's experiment be carefully tried, and the result as carefully noted, and we shall reach some important facts.—EDITOR.]

TWO SECRETS.

BY FOX MEADOW.

MR. EDITOR:—We don't know whether you are as good a hand in keeping secrets as the ladies are; but we suppose that we can trust, in confidence, all secrets on *horticultural* subjects very safely in *your* hands. When men begin to think that they know something "of something" which no one else knows any thing about, they are very careful how, when, and where, they speak of the darling treasure wrapped up in the bottom corner of their large hearts. Now we have just two secrets which we want to tell you; and as we have written secrets a long while ago to you, and you have been kind enough never to divulge them, we are going to entrust you with two more.

You have often told me how fond you are of growing grapes, and that you are making more new vineries. New borders with lots of new ideas, and new theories. What wonderful preparations there are every day made for the vine; how borders are compounded by the drachm and scruple; how deep they are made, and how shallow they are made, and then after making so shallow, how thick a mulching is necessary on them to keep the sun from burning up their poor roots. How borders should be drained, not merely for the sake of taking off water from wet bottom lands, but to show how ingenious some inventors are in

filtering away all the precious nutriment which has cost so much money in these vine borders. It is a great pity, sir, that we have not got some vine borders formed within glass cases, so that we could see the precious little root at work like bees in a glass hive. If we could only construct a border like this in some secret spot out of sight, where we could enjoy the sight ourselves of watching the transactions of the little roots as well as the big ones, what a sight we should see! Can't we imagine something how it would be? A border two feet deep, half rotten dung, with two feet of broken stones or oyster-shells in the bottom, and drain cut across the bottom besides; and then a large main drain which must be large enough not to entertain a doubt of its capacity in carrying off a volume of water nearly large enough to drive a grist mill! A border of this sort must be full of vine roots, certainly it must! With all these good things in it, it is bound to be full of roots; but if we had only got the glass case, we could see all about it, and we should see very few of the roots in the border. When you put a strong growing plant into a pot, the first thing done is to make a good rich compost, with plenty of good rotten dung; yes, and then the next thing is to have plenty of drainage; yes, the pot one-third full or nearly so. In three months' time after potting—and the plant lives and flourishes good—turn this same plant out of the pot, and where do you find the roots? All through the soil in a mass? Not a bit of it; they are down in the bottom of the pot, wound round and round, sucking up the essence washed out of the beautiful compounded compost. So are the roots of these vines in these filtered borders. There is a vast difference between *draining* a border and making it a *filter*. A drain cut all around the intended border, and sunk twelve inches below the bottom surface of such border, in most instances is all that is needed, with a proper outlet for water. *Stagnant* water, let it be ever so little in the bottom, is very destructive, and a *filtered* border is no better.

Much has been said of vine borders, a vast amount of money spent on them, and many books written on the same subject, but who has written about the VINE PLANT? Who has told you, my dear sir, that the great important fact, the ultimate of all compounds—the perfection developed out of all borders—depends upon the *healthy organization of the plants put in them?* You may just as well tell me that a gorgeous mansion, decorated with all the splendor and magnificence of wealth, will restore health and strength to the broken down, emaciated constitution and that its glittering walls will re-invigorate the broken spirit, and re-instate the body with joyful health. Our knowledge of the laws of the animal creation teaches us a different tale. When once the vital fluid of this animal organism becomes checked, pores contracted, channels contracted, cankered, and weakened, it takes a mighty power to drive it through again, in its original gentle-flowing streams. Splendid palaces may be created for the broken down constitution—a toy to please the spirit passing away—but they can never build up health. So with your palace vine borders; stuff them as you will, gorge them as you will, filter them as you will, concrete them as you will, make them *inside* or *outside* as you will, *you will never produce a good sound bunch of grapes from vines having a broken down constitution.* This we call your attention to as SECRET NUMBER ONE.

You may ask me, "What is meant by a broken down constitution in a young vine?" We answer, dying in a five inch pot for two years before it is sold for planting into some palace vine border, for the *enormous sum of fifty cents.* This, by-the-by, is getting to be an outrageous price for grape-vines; some folks, however, are getting more rational, and are quite willing to sell them for *twenty-cents* each. Would you like to know what I consider a good sound constitution in a

young grape vine to be? I think I can hear you *laughing*, yes; so I will tell you. Grown from an eye into a cane six feet long, and one quarter of an inch in diameter at the end of that six feet, in six months' time, thoroughly ripened, the leaves turning naturally yellow, and dropping off because they have fully done their duty; and having plenty of roots as large as the cane itself, and equally as long. Do you not think that it would be a far better policy to save some of that useless money spent in making the palace border, and add a dollar to the price of the vines? You may think me, perhaps, rather dogmatical when I tell you that no vine is worth planting unless it comes very near to the standard given, and that we should much prefer giving two dollars each for such plants, than we would be willing to give one cent for the former class. We place far more dependence on the kind of vine for planting than we do in the formation of the border. If we could get nothing better than some vines said to be *grown* for two years in pot, before we would plant such vines, we should be strongly inclined to grow them one season ourselves in pots or tubs, and get them into a proper condition for planting out. I do not deny that even weak, poor plants, will grow the first season after planted out in the border, and make as good canes in *size* as we could desire; but the chapter does not end here. We want the glass case again to see where the roots have gone to that such plants have produced. They are in the border, it is true, but if you could see them, they are nothing more than a lot of tap roots gone direct down to the bottom of the border; and our humble experience is, that many men have been stumbling all their lives against the *border* without ever considering the action of the root. This is a long subject we are getting into, but for the present we will not tax your patience further on this point; but if you are going to plant vines this spring, get such ones we have been describing, and Bacchus will crown you KING OF HORTICULTURE for all future time.

Now for the second secret we promised to tell you; and this lies in a little fact in the management of the vine, RIPENED WOOD. There are two fundamental principles in the successful cultivation of the vine never to be lost sight of, and which, in our opinion, stands first of all other considerations, namely, a fine strong healthy plant to start with, and a full determination to have all the wood such plants produce, thoroughly well ripened. There is a question now that naturally suggests itself, and that is, "How are we to know when such wood is thoroughly ripened?" You may answer me by saying, "When the wood becomes fully browned, and the eyes or buds plump and full." Ah, my friend, if this is all, it only shows your want of experience, for this much is often seen accompanied with green foliage. Wood is never ripened as long as any portion of a green leaf holds to the vine! Vines cut down by frost when the foliage is green *have not ripened* their wood. You may be satisfied, in your opinion, that they are ripened enough to sustain no injury, and that you will get a good crop the next season; but we tell you, emphatically, that every green leaf that falls off through frost, is so much less in the weight of your bunches of grapes the next season. To obviate this it becomes necessary to think and act intelligently. Growths must be measured and restricted, watched attentively at the latter end of the season, and checked or stopped accordingly; and if proper attention is given to the admission of plenty of air, after all tender growths are matured and hardened, much of the tendency to late growth will be avoided. There is much more difficulty experienced in preventing a late or second growth in houses *early forced* than cold houses, because the wood in the former gets ripened pretty well before the heat of summer sets in, and the heat and moisture thrown into such

borders induce a second growth in the roots of early forced vines, and starts them into a second, or what we may properly call a *natural* growth. In this fact comes the tug of war. If the sap gets up and the vines make a growth, such vines for the next season are in a far worse condition than poorly ripened canes in a cold vinery, and are liable to produce much less the following season. When such is discovered in early forced vines, it is much the safest and best plan to let the vines break again, and prune them in as soon as the second sap is fully up, and treat them in every respect the same as vines started early. This will do the vines no harm, but, on the contrary, do them good, simply because they will then get a season of *natural* growth which will much invigorate their constitutions. This act of second pruning, however, requires a positive knowledge of the exact time when it should be done. If done too quick, the vine so cut back will not break at all, and will stand over for the next spring, and when *then* put to work will refuse to move one jot where it ought to move, but will push out of the old wood at every possible point before it will break out of the young wood where it was cut back to, because the sap being stopped, and checked in green wood, has no perfected channels to work through. To guard against this second or late growth in forced vines, requires very rigid attention; and the growth should be checked back on its first appearance, for if allowed to grow a while, the power of the sap will overpower all mechanical operations with the fingers. The wood of all vines then, to be well ripened, is indicated by the leaves turning yellow as they do in the natural forests, and drop down of their own accord. We may then rest ourselves, assured that Nature has done her own work in her own way, and the bounteous supply given us the next season will teach us the truth, that no wood is well ripened but that which Nature ripens in accordance with her own natural law, and in this lies our SECRET NUMBER TWO.

[Editorially speaking, Mr. Meadow, we can keep a secret as well as a woman, "or any other man," and our readers have the best evidence of that fact right before their eyes. Send us all the horticultural secrets; we know how to keep them. Yes, we are fond of growing grapes, and we are putting up lots of new graperies, with inside borders too, properly drained; but *we* never *filter* them, Mr. Meadow; couldn't think of it. We *have* grown vines and other plants in glass cases, and seen such wonders as you would hardly believe. You are emphatically right about selling vines for *fifty* cents a-piece. No man can afford to grow a *first-rate* vine for that sum, let his facilities be what they may; yet poor vines will continue to be grown for that price, simply because the great mass will more readily buy a poor vine at fifty cents than a good one at a dollar, notwithstanding the latter is immensely the cheapest. We wish our friends would look that fact seriously in the face. We desire to see vines and trees put down to the lowest paying price, but we do not expect nurserymen to grow first-class vines or trees for nothing. Now we have kept your secret so well, Mr. Meadow, be encouraged to tell us some more.—ED.]

THE DELAWARE GRAPE.

BY D. S. HEFFRON, UTICA, N. Y.

Mr. Editor:—I do not propose, in this communication, to settle the mooted question as to the nativity of this fine Grape; but as it has been grown within about four miles of this city for nearly eighteen years, I presume many of your readers would like to know how it came here, and what report we can make of its doings during all those years of probation.

A Mr. Foster first brought the Delaware to this county nearly eighteen years ago. He obtained the cuttings of a friend in Lambertville, N. J. After fruiting the vines for a few years, Mr. Foster changed his residence a short distance, but he reserved his vines, and took them with him, and has fruited them where he now resides for the last ten or twelve years.

That Mr. Foster's vines are true Delaware I do not ask you to believe on my word alone; for, in August, 1860, having a call from Mr. Charles Downing, of Newburgh, and the Delaware Grape king, Dr. C. W. Grant, of Iona, I had the pleasure of showing them one of Mr. Foster's Delawares, in fruit, in the fine grounds of the Hon. O. B. Mattison. These gentlemen both pronounced it the genuine Delaware by the time they were within ten feet of it. No further testimony need be added as to the genuineness of this Grape; but it may not be out of place to say, that when the fruit was ripe I took the trouble, for my own satisfaction, of comparing it with fruit that I had grown in my own grounds from Delaware vines that I had obtained from Dr. Grant, and I found them exactly alike *in every respect.*

Unfortunately the Foster Delaware has not been disseminated much, as its proprietor has been satisfied with having a few old vines, producing a better quality of fruit than any of his neighbors; and not knowing its true name until the fall of 1859, he has never propagated it, except a little by layering for the accommodation of his immediate friends.

And now what does this disinterested witness say of the Delaware during all this time that he has grown it? He showed it to me on an open trellis in his yard, and assured me that he had always grown the vines thus exposed; said he had never been in the habit of laying them down in winter; had never had the vines winter-kill so as to injure them; had never known them to mildew; if they had, he had never noticed it, and thinks he would have noticed it had it taken place. And, what will please us all, he said his Delaware had never failed to yield him a full crop of most luscious Grapes annually, that had always ripened before our early frosts.

It appears to me that no vine but a native, "to the manor born," could bear such a severe test as Mr. F. has unwittingly given the Delaware, and come off with such flying colors. The past season was a very trying one for vines in this section. The most of them grew late. The Isabella, Catawba, and others of the same class mildewed very badly, and did not ripen their wood as well as usual; but the Delaware ripened its wood as well as the Concord, and was not more affected by mildew. I saw no rot among the fruit of the Delaware, while the Concord was slightly affected by it.

It should not be forgotten that our winters are pretty severe, the mercury sometimes marking nearly 30 degrees below zero. On the morning of the 7th of February ult., the mercury was 27 below in the city, and 28 to 30 below zero in the country about here.

ON THE SYSTEM OF POT-CULTURE IN ORCHARD-HOUSES.

BY AN OLD-COUNTRY MAN.

The Orchard-House has become an object of interest to many amateurs of late in this country, and to them some remarks on the cultivation of fruit-trees in pots, from an old cultivator, may not be devoid of interest.

The principles of good culture are the same in reference to all exogenous plants, but practical application of them under different conditions of cultivation is various; arising from the diversity of climate, whether natural or artificial, to which we subject them, as well as from the mode of culture adopted, whether of confinement in the limited space of pots or tubs, or in the open border.

In orchard houses in England it is not unusual to adopt both modes, that of pot-culture and of open border culture, in the same house. That is not advisable in this country. It may be done successfully by a skilful gardener, master of his profession; because he will know how to avert or to remedy any injurious result arising from the different effects which the two methods produce upon the trees subjected to them. But the tyro had better confine his system to one of the two; and as pot cultivation is that for which these orchard houses were originally more particularly intended, it is to *that* system that the following remarks are intended to apply.

The first thing to be done is of course to obtain a suitable supply of large pots, not less than eleven inches in diameter, and others larger; and a stock of healthy young trees.

Whether peaches, pears, or whatever kind is required, the most satisfactory mode for the amateur is, to grow the plants into the bearing condition himself, in preference to purchasing them prepared in pots in a bearing state; because it frequently happens to the young horticulturist, that he, by mismanagement, destroys expensive specimens, perhaps without obtaining one crop from them; whereas, if he grows them himself, he will assuredly learn much in the course of the operation, and his mishaps will not be so costly. This, of course, requires some patience; and those who do not possess a sufficient stock of it, may, at the good nurseries, purchase trees of the various descriptions of fruit properly grown in pots for immediate bearing.

The great essential, to commence with, is suitable soil. This consists in good open loam; not clayey on the one hand, nor sandy on the other. The former would be too stiff for the fibrous roots to work freely, and the latter would be too poor to grow a tough, sound wood, without which fruit of fine quality can not be produced. If the top six inches of a rich pasture can be obtained, a good heap of this laid up, turf and all, with a little lime sprinkled between every two or three layers of it, will at the end of a year be the very thing required without any addition to it.

If a clayey loam only is available, some sharp sand or road grit must be added to it to open its texture, and also a small quantity of old stable manure. And if a sandy loam only can be had, it must have a goodly quantity of old rotten dung added. But these are by no means so eligible for the purpose as the top of a good unctuous loamy pasture, without manure, because the object is, *not*, by stimulating rapid action in the roots, to produce either a large or extended growth, but to have the wood that is made, of a sturdy, mature quality, yet of a moderate size. This will always be found to tend more to fruitfulness than the rampant

growth consequent upon highly manured composts, such as we want if our object is to grow a large cabbage; and which would have been equally useful in the orchard house if we wished to grow peach *leaves* only instead of fruit.

As regards manure, *that* will be required occasionally in the orchard house at certain stages of growth; but that is best supplied in top dressings and in the *liquid* state.

Provided with a good soil, the next point in commencing operations in an orchard house is to pot the young trees. Upon the efficient way in which this apparently simple operation is performed, very much of future success will depend.

There are two different methods of preparing fruit-trees in pots for cultivation under glass. For that which is *first* about to be explained, the larger the pots are the better. One thirteen inches in diameter will suffice for the first two years, but not smaller than that. The object in potting well is so to place the plant or tree, that the roots may ramify freely and as nearly equally as possible throughout the whole mass of earth, and from the center to the sides of the pot; and to keep the consistency of the soil equal throughout, upon which will depend the even distribution of water, which has to be constantly supplied to afford nourishment and to retain the soil in such a state, as enables the roots to appropriate to their use the elements necessary for the production of the organization of the plant.

To secure these objects good drainage is the primary step. Broken pots afford the best material. An inch of these in depth should be placed all over the bottom of the pot, and upon these put a layer of equal thickness of moss or half decayed turf, to prevent the earth when placed in the pot from getting down to the lower drainage material, and stopping it up. A better material than moss for the latter purpose is cocoa-nut fiber, or the outer husks of cocoa-nuts torn or beaten to pieces.

Supposing the potting compost to consist either of loamy turf laid up, or of the mixtures above advised, it should be chopped up with the spade and used in the rough state. If some of the pieces of the fibry turf are as large as eggs, so much the better; their elastic quality will compress, and will tend to keep open the ball of earth. It is a good plan, also, to mix some pieces of charcoal an inch or more square, or of broken sandstone, or any *porous* stone, with the compost, in the proportion of a hatful to two bushels. This is to keep open the soil, and to become little reservoirs of moisture around which the young roots will cling.

Having laid the foundation of drainage, cover it over with an inch or two of the compost, and then introduce the young tree. Before doing so, however, examine the roots of it carefully, and cut off smoothly any torn or ragged root. Then, holding it in the pot with one hand in such a position that, when filled, the surface of the soil may just come to the same part of the stem of the plant that touched the surface of the ground from which it has been removed, (and taking special care that it is not now placed deeper than it was planted before,) fill round and between the roots gradually with the potting compost, thrusting the earth down from time to time with the points of the fingers or a potting stick of an inch diameter. By this means the roots are to be placed in close contact with the soil throughout the pot. Take care that, while sufficient pressure is used to make the earth moderately firm, the force is not so violent as to break the roots. Thus the pot, when filled, will, from the pressure having been applied as each handful of earth was introduced, retain something like an equal consistency of texture throughout, without any thumping of the pot on the potting bench, as is sometimes recommended, to the great danger of the roots. The pot should not be filled to the top

edge: leave an inch in depth of the pot within the rim free to receive and retain the water necessary in future cultivation.

When thus placed in the pot, the young plant will be in a favorable condition to ramify its roots throughout the ball of earth, during which process it will be forming its head, consisting of its branches and its bearing wood. By the time that frame-work of the future tree is perfected, the roots will have filled every part of the compost, and, in the common parlance of gardeners, the tree will want potting. But now will appear the great value of efficient work. No new potting must take place, at all events until a crop of fruit has first been grown; and hence the importance of having got the roots into such a state by the past treatment as will enable the cultivator to supply the tree with all the nourishment it will require during the next year's culture, for its growth and for maturing a crop, by means of liquid, whether water only or combined with manurial matters.

It will be readily perceived that this can only be done by an even distribution of the liquid *throughout* the ball of earth; and that distribution can only be insured where the potting compost, and the mode in which it has been used, are such as to render the whole a moderately compact body, pressing nearly equally on its several parts, and upon the sides of the pot in which it is placed; the *downward* pressure being resisted, and the center consequently retained open, by the elasticity of the body of roots on the one hand, and of the fibry potting material on the other. It may seem to some that needless minuteness has been insisted on upon the subject of potting. But, the principle explained in this paragraph being understood, the young cultivator will soon learn by experience of how great consequence it is that these first operations (in this method of fruit growing) should be well performed.

But there is another mode of preparing or potting fruit-trees for the orchard house, differing materially from the foregoing, and which is adopted when it is intended that the pots shall be placed in the house upon a rich border, into which the roots are to be allowed to introduce themselves through the bottoms of the pots during the growing season; and this is a much more simple operation, and moreover a better mode for insuring a large crop; because, although placed in pots, upon that system the plants are not dependent for support upon the earth in the pot only, but, while in active growth and in the season for maturing the fruit, they partake in a great measure of the advantage derived from open ground culture, without being liable to many of its casualties. And therefore, where the situation of the orchard house is such as to permit of these borders, or rather where the proprietor does not desire to combine other objects in the same house, the last mentioned plan is the best for adoption. But whenever it is wished to adopt pot culture in a house in which, for any reason, it is not intended to have an open border of earth, the plan of potting that has been described is the only one that can hold out the prospect of a moderate degree of success. Before proceeding with remarks upon the general principles of cultivation, the other system of potting just alluded to shall be explained.

(*To be continued.*)

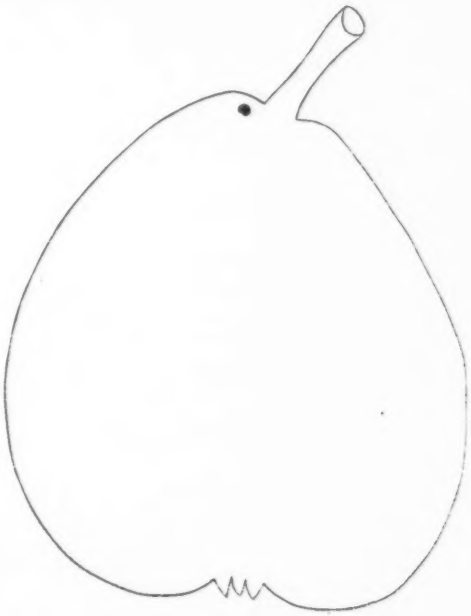
[This is a subject of growing interest, and its value is destined to be fully tested here by some of our leading amateurs. We have already expressed our opinion as to the extent of its value. The second article of "An Old-Country Man" contains full particulars in regard to pruning, watering, and general treatment.—Ed.]

NEW PEARS, WITH DESCRIPTIONS.

BY HON. MARSHALL P. WILDER, BOSTON, MASS.

Mr. Editor :—Complying with your request, and sympathizing with you in your recent loss by fire, I am most happy to contribute my mite in sustaining your excellent Journal, which for more than fifteen years has been a constant companion on my table.

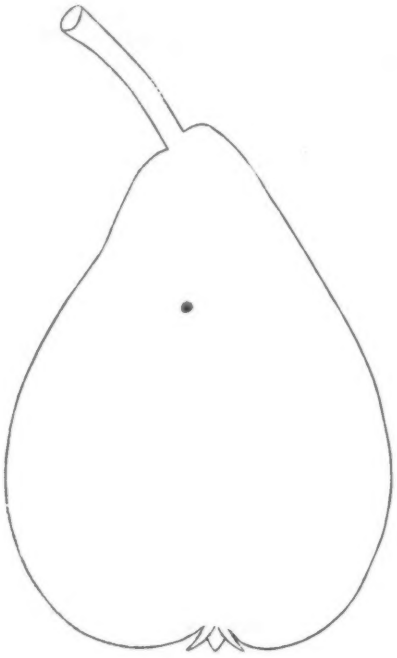
I therefore annex descriptions of a few modern Pears, which, in my estimation, possess valuable characteristics.



BRIALMONT.

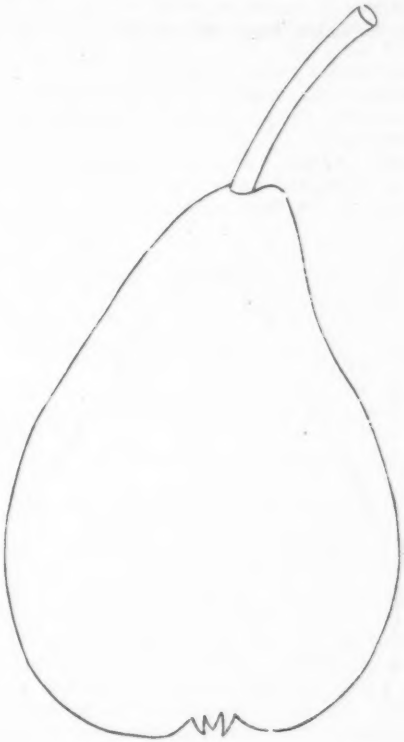
Brialmont.—*Size*, large; three inches long by two and a half in diameter; *form*, varying from obovate to obtuse pyriform; *stem*, thick, short, frequently set on one side, and inserted without depression; *calyx*, closed, sunk in a rather shal-

low basin; *skin*, yellowish green, stipules indistinct; *flesh*, white, melting, juicy; *flavor*, sweet, rich, aromatic; *season*, first of November; *quality*, best; *tree*, habit erect, resembling the Urbaniste, hardy and prolific.



BEURRE ANTOINETTE.

BEURRÉ ANTOINETTE.—*Size*, three inches in height by two inches in diameter; *form*, acute pyriform; *stem*, one inch in length, generally planted a little on one side, and without depression; *calyx*, large, open, sunk in a rather shallow basin; *color*, dull yellow, stippled with coarse russet dots, with bright carmine cheek; *flesh*, melting and juicy; *flavor*, vinous, saccharine, rich; *season*, October 1st to 15th; *quality*, very good—may prove best; *tree*, strong, hardy, prolific, and of excellent habit.



HENRI VAN MONS.

HENRI VAN MONS.—*Size*, three and three-eighths of an inch in length by two and one-fourth in diameter; *form*, oblong acute pyriform; *stem*, long, curved, planted in a fleshy ring at the base; *calyx*, closed, sunk in a narrow, small basin; *color*, dull bronzy green, profusely covered with coarse russet dots, and clouded with red on sunny side; *flesh*, half melting, juicy; texture rather coarse; *flavor*, sweet, vinous, with nut-like aroma; *season*, October to November; *quality*, very good; *tree*, vigorous, hardy, with magnificent, large, luxuriant foliage and flowers.

COLORÉE D'AOUT.—A very beautiful pear, size, color, and form of Louise Bonne de Jersey, but with brighter tinge on the sunny side. *Quality*, very good. Ripe in August.

URSULE.—*Size*, medium; *form*, obovate pyriform; *color*, yellow, with a crimson cheek—handsome and prolific; *quality*, very good; ripe in October.

DR. NELIS.—*Size*, below medium; *color*, yellow, with vermilion cheek; *flavor*,

sweet, rich; *quality*, best—equal to its congener, the Winter Nelis; ripe in November and December.

Beurré Seringe.—*Size*, medium; *form*, same as the Urbaniste; *color*, yellowish, with brown and red cheek; *flavor*, melting, juicy, and fine; *quality*, very good; *tree*, hardy and prolific; ripe in September.

Monseigneur Affré.—*Size*, medium; *form*, roundish; *color*, dull russet; *flavor*, sweet, rich; *quality*, very good; ripe in December and January. A constant bearer, and very hardy.

Dr. Bouvier.—*Size*, medium; *color*, yellowish green, with brown cheek; *flavor*, sugary, vinous, and rich; ripe in December. On warm, generous soils, this Pear is not inferior to the Lawrence, which it resembles in appearance and quality.

Beurré Haffner.—*Size*, medium; *form*, obtuse pyriform; *color*, yellow, with rosy cheek; *flavor*, sweet; *quality*, very good. This variety comes to us from Europe as a winter fruit, but its season here is November.

Beurré Burnicq.—*Size*, medium; *form*, acute pyriform; *color*, handsome russet; *flavor*, pleasant sub-acid, aromatic; *quality*, very good. A very prolific hardy tree, bearing every year.

Note.—The prospect for fruit is very unpropitious in this region. All of the flower-buds of the Peach and Cherry are destroyed, and many varieties of the Pear are fatally injured. Among the latter, I find the Lawrence and Sheldon buds have suffered badly; but the trees are sound. The fluctuations of the mercury have been very remarkable during the winter. On the eighth of February the weather was colder than it had been for twenty-nine years, the glass marking 23 degrees below zero. Then came the warm day on the third of March, with the thermometer, at noon, at 80 deg.; at evening at 65 deg.; then in five days after, on the 8th, it registered only four degrees above zero. The failure of our fruit crop will be attributed to these extreme vacillations. I do not think so, but apprehend the damage was done on the morning of Oct. 1, 1860, at which time our Grape crop was destroyed, and when apples froze on the trees so as to split open. Perhaps I can not adduce a better proof of this opinion than the fact that our Chinese Azaleas lost all their flower-buds at this time: a circumstance which never occurred before. Among the varieties of Pears which seem to have withstood this severe trial best, I find the Beurré d'Anjou, Urbaniste, Louise Bonne de Jersey, and some other of the standard kinds.

[We are rich in old friends this month. It is so long since Mr. Wilder has spoken, that we had almost begun to fear that his interest in horticulture was on the wane; but we find he writes with all his old enthusiasm. We thank him for the opportunity of laying before our readers the results of his experience with some of the more recent pears. We regret to hear of the loss of your fruit-beds; we have the same sad news from many different quarters. In some places, we know, from examination, that the mischief was done early in the season, and this will probably be found to have been the case generally, which will accord with your views. The destruction of fruit was caused, we think, not so much by fluctuations in the winter as by the imperfect ripening of the buds, the result of the excessive bearing of the trees during last season. Heavy crops, followed by early cold and wet weather, prevented the fruit-beds from ripening, and made them an easy prey to the first extreme change of temperature. How does that accord with your philosophy?—Ed.]

THE WINTER OF 1860–61 ON EVERGREENS.

BY H. W. SARGENT, WODENETHE, FISHKILL LANDING, N. Y.

Disastrous as our winters usually have been the past few years, yet we are not wholly alone in our misfortunes the past season. In England, on the 24th and 25th of December, the mercury fell in two places—at Chatteris in Cambridgeshire, and at Cheadle in Staffordshire—to fifteen degrees below zero; and even in London, and generally throughout the kingdom, to several degrees below. The result there upon vegetation has been more fatal than at any other period within the present century. The young shoots and spurs on peaches, apricots, nectarines, cherries, and even some pears, are quite destroyed, and even the old wood is injured.

Evergreen Oaks, Hollies, (fifty years old,) Phillyreas, Laurustinus, are killed to the ground. The destruction has been so complete, that in highly ornamental grounds the exhalation from the frozen plants has been positively offensive.

Various ornamental flowering shrubs, usually requiring the protection of a wall, have been unable to withstand the severity of the cold. Most of the Magnolias, even old and well-established plants, have been killed in an eastern exposure, and in a western so much injured as to render their recovery hopeless. The newer conifers as well as older varieties have all suffered to a greater or less extent. In fact, our own winter, bad as it has been, has proved the safer of the two, and for a much greater variety of plants. Although with us the mercury has fallen as low as nineteen degrees below zero in this place, and in many parts of the country to twenty-three and even thirty degrees, yet I believe the only effect has been to destroy the fruit-buds. I do not observe here, nor have I heard elsewhere, of any loss of young wood.

Could we have escaped the two excessively cold days in January, when the glass ranged from nineteen to twenty-one degrees below in this neighborhood, our winter would have been less destructive than usual; and though the mercury fell four or five degrees lower here than in England, yet the damage there was infinitely greater, adding another proof that the cold is not of so much importance as the condition of the plant at the time. Our wood, from our warm, dry autumns, is always much better ripened than the English, and consequently goes into the winter campaign much better prepared to resist cold.

This was particularly the case the past year, when, from the unprecedented quantity of rain and little sun in England, the summer's growth was very imperfectly ripened, and in the worst possible condition to endure even the ordinary frost. Thus Lilacs and Weigelas, which are always regarded perfectly hardy here, were in England very badly injured. Many plants growing with great vigor have been utterly destroyed, while the same variety of plants, when removed in early autumn, if ever so much exposed, have suffered comparatively little, the supply from the roots having been diminished; the system was relieved of excessive moisture by evaporation, and in consequently a much better state to resist cold.

Among the conifers, varieties which are unquestionably hardy, (never in this place at least having suffered,) have completely perished in England, such as Pinus Benthamiana and Pyrenaica. Even Thuiopsis borealis is badly injured, though with us it stands like our common Arbor Vitæ. Most of the younger Araucarias, Deodars, and even Cedars of Lebanon, are either killed or injured, while specimens of twenty years' growth have comparatively escaped, the wood being better ripened.

In my own neighborhood, as I have before mentioned, the effects of the winter have been much less severe than usual; nearly, in fact, all the evergreens which I have in former years reported as hardy, continue to deserve this reputation. In addition to the previous list, I would add, as perfectly uninjured by nineteen degrees below zero—

Picea amabilis, nobilis, grandis, and Parsonii or Lasciocarpa. In addition to the previously mentioned *Abies*, are Taxifolia, Jezoensis, Whittmaniana, and Pattonii.

Cryptomeria Japonica, both the common variety and Lobbii, seem to have become acclimatized, and are hardly touched.

So, also, *Cunninghamia sinensis*, which is perfectly green, and beginning to grow.

Deodars, on the contrary, appear hopeless, except as bushes.

Cephalotaxus, both male and female, as well as *Thuiopsis borealis* and *Cupressus Lawsoniana*, are as hardy as our common Cedars. Cupressus macrocarpa, Goveniana, and Knightii are, however, killed to the ground.

The *Golden Yew* seems much hardier than the common English, (T. baccata,) though this stands well, and Taxus adpressa, very pretty and distinct, is equally hardy as either.

Among the *Thujæ*, (Arbor Vitæ,) Hoveyi, (Hovey's,) cristata, (Buist's Seedling,) gigantea, glauca, and Craigeana are perfectly green, and have been so all winter; and even *Podocarpus nubigena* holds its color and health perfectly well.

Wellingtonias are somewhat browned, but wood and buds good.

Among the *Evergreen gains* of the past year, I consider the most important, Cupressus Lawsoniana, Taxus elegantissima, Podocarpus nubigena, Berberis Japonica, Taxus monstrosa, Taxus microphylla, Pinus Jeffreyi, Pinus Beadsleyi, Pinus Sabiniana; and among the named *Rhododendrons* are Azureum, Sir Charles Napier, Bicolor, Grandissimum, Concessum, Vandyke, Barclayanum, Delicatissimum, Cœlestinum, Brayanum, Multimaculum, Achimedes, Magnificum, Prince Albert, Lord John Russell, all of which are entirely uninjured and well set in flower-buds.

[We are all under deep obligations to Mr. Sargent for his valuable observations on introduced Conifers and evergreen plants. The results of his labor and devotion possess a practical value for all of us which can not be estimated too highly. It were much to be wished that we had a corps of such liberal-minded men at various points throughout the country; the collected results of their observations would possess a deep and wide-spread value. We know of no way in which they could spend a portion of their wealth with more pleasure to themselves and profit to the public. Mr. Sargent gives us a sad picture of the results of the winter in England, but by no means overdrawn; he might, indeed, have painted it in still deeper colors, if we are to form an opinion from the English Horticultural press. Standard Roses, Grape-vines, and other plants come within the same category. We think Mr. S. has assigned the true cause of all this desolation, in the non-ripening of the wood last fall; and to the same cause we have elsewhere ascribed the loss of our fruit-buds during the past winter; the cause of non-ripening in this case, however, is to be assigned more, perhaps, to the overbearing of the trees last season, than to the cold fall, early winter, or sudden and extreme variations of temperature. The whole subject is very suggestive.—Ed.]

THE VERBENA AGAIN.

BY J. PENTLAND, BALTIMORE.

Mr. Editor:—I have neither the time, nor yet the inclination, to enter into a controversy with any one in a newspaper or magazine, believing that no real good ever comes from it, and people get tired of it very soon—at least I do; but as our "talented" English friend, Mr. Veitch, has seen proper to misconstrue the remarks I made in a former number of your valuable magazine, I must try and put him right; and really I think he must have been in a very bad humor when he penned the article that appeared in the March number of the Horticulturist. Perhaps he had been making too hearty a meal upon "roast beef and plum pudding," which didn't altogether agree with his stomach, and may have caused an uncomfortable irritation; and having fallen upon my poor article, the Verbena, he must needs pour out his wrath upon my poor head, or perhaps he has a *batch* of those very same "novelties" to send out "imported direct from England," and may have thought the article in question might interfere with their sale; but no, sir, I didn't impart any such unworthy motive to him in the least; by no means. If he supposes the article in question "to have originated in petulance or disappointment at not being so successful in that line as to set his (my) own beyond all question at the top of the list," he never was farther from the mark. I can assure him, I have none whatever to offer as being so superior, and have no interest in any other whatever; therefore I have nothing to gain on that score. But Mr. Veitch in the very commencement (unknowingly) proves the very point of my argument; and his own words shall condemn him. It was from my knowledge of "America being unspeakably better adapted to the Verbena than England" that I drew my conclusions; and say again "*emphatically*" that were American growers of the Verbena to give the same attention to the cultivation of seedling Verbenas, (or any thing else,) they would outstrip our English cousins in the production of better varieties of that truly beautiful flower; and "that there is something rotten in Denmark," I am free to admit, and prythee wherein does that rottenness cousist? I will tell you: it is in pandering too much to this very "European opinion;" and it was simply to call attention to this too prevalent "opinion"—to the exclusion of our own interests as producers of articles, (even superior to those that have passed the censorship of the same committee on flowers in England,) that I penned the article in question; and there I agree with you that perhaps it would be well if we had in this country a like "censorship" upon flowers; but suppose we had, what would it effect? simply nothing. True, the flowers might be measured by plumb, square, and rule, and according to the rules laid down by "Glenny." Now suppose a Verbena had all the qualities mentioned by Glenny, and yet withal the plant should be a poor bloomer, or would not stand the sun, would the public be benefited by those qualities if the plant lacked the latter quality? and depend upon it, there is not one in a hundred, when they come to a bed of Verbenas, that ever stop to examine whether the single bloom comes up to the requirements of Mr. "Glenny" or not; it is the general effect that is looked at. What do your customers ask you when they come to buy a Verbena? Is it, Has it Mr. Glenny's standard? or is not the very first question they ask, "Is it a good bloomer and a good grower, and will it stand the hot burning sun?" Now, if you can not answer these questions affirmatively and positively, ten to one they will not buy your Verbena, be it never so fine in all the qualities of Mr. Glenny, or with never so fine a

name; and were all our Verbenas put to this test, you may depend upon it our catalogues would indeed be very much abridged.

Again, I would say to Mr. Veitch, that I have no fault to find with the aristocratic names given to their "bantlings" (he don't like the word) by the English growers—none in the least; I would rather congratulate them upon the great facilities they have in such names over us poor republicans; but what I do certainly find fault with is this, that the public are led away by such high-sounding titles; they savour too much of toadyism. But that, say you, is none of our business. If Mr. Veitch will examine the article again, he will find that the English have received full credit for producing some really fine Verbenas, that do tolerably well in this country; but, sir, I find that the English writers have been more condemnatory upon the Verbenas raised and sent out by these same English cousins than I have. See the London Florist for 1859 or '60, (I can not say which, as my numbers are at the bookbinder's,) and read an article or two therein entitled "The Slaughter of the Innocents," and Mr. Veitch will be surprised at the small number therein contained as *worthy of cultivation*, for all the purposes for which the Verbena is so much used. Read it, Mr. Veitch; it will enlighten you a little on the subject. If I get time I will go to the binder and get the year and the page for you, and send it to the editor; only keep your temper, and do not get to roaring, as the English Lion is apt to do when all don't go right according to his fancy; and let me say that I did not intend to give offense in the least to any of the "English growers," but would bid them God speed in their great and glorious work of striving to excel in the production of all that is beautiful in both fruit and flowers; and whenever they have any thing that is *decidedly* good and *distinct* they will always find purchasers here, but I hope not to the exclusion of home grown articles of *equal merit.* Is not the fact notorious? Instances could be related without number, of home productions having to be sent from here to get this "European opinion." Mr. Fuller, in his article on "Imported Roses," mentions another instance of what I aim to put a stop to, if possible, by any feeble efforts of mine. Truly it speaks well for our "English cousins;" but is it not very derogatory to us that we have to submit to such things? What encouragement is given here to the growers of any thing really fine, for all the labor and time he has expended in its production before he can sell that article? It must first get this "European opinion." "Can no good thing come out of Nazareth?" or does Mr. Veitch suppose that this thing of pandering to this "European opinion" is all right, and that we Americans do not know a good flower when we see it? Must we still submit to see John Bull turn up his nose when we offer an opinion of our own? Out upon such an opinion. Now, Mr. Veitch, I am an American citizen with a Scotch name, as you will perceive; but, sir, you and I both are indebted to the American public for our "bread-and-butter," and let us uphold and sustain the productions of this country in preference to any other, when they are of equal or *superior* merit; and let the importations come in secondary, and we will prove them, and hold fast to that which is good until we can excel our cousin again. I hope, now that the ball is set in motion, that there will speedily be a committee of censorship appointed to examine and pass judgment upon *all* new productions that may be offered to the public for their patronage; and I am sure no honest man would object to such a committee passing judgment upon any thing he might have to offer; but if we keep on pandering to this "European opinion," some may say that we have not judgment enough among us to give an opinion upon the merits of a flower; but, sir, if this committee is appointed, I hope when flowers are submitted for their judgment we will not adopt the plan of the English gar-

deners, and use the pincers and scissors, and all the other paraphernalia to dress up a flower for their inspection: no, sir, I hope we won't adopt that opinion as being necessary; but let them be submitted as nature made them, and not as art may dress them in order to get a good drawing of them. How many of the flowers that are annually sent out come up to the description given of them in the beautiful plates that we get of them? I hope some other will answer that question. In conclusion, I would say, give us Americans the same encouragement as the English gardeners receive from the public, and we will "beat them out of their boots" (as the Connecticut Yankee would say) in the production of choice flowers and fruits.

[It will be evident, from Mr. Pentland's article, that Mr. Veitch and Mr. Henderson have not fully understood his object, as we intimated. We see no reason to change the views we expressed last month, considering them sound and liberal. —EDITOR.]

THE CURCULIO.

BY DR. I. P. TRIMBLE, NEWARK, N. J.

[*Continued from page* 180.]

THE Curculio is a hard, black, rough beetle. A handful of them, when at rest, with their legs and probosces folded under them, could be mistaken for a handful of hemp-seeds. Like other beetles, their wings, when not using them, are covered by a case or shell; the proboscis is long in proportion to their size, and is the instrument with which they puncture the fruit, and is not, as some suppose, an ovipositor. (See plate.)

Persons familiar with the Curculio seldom see them fly, though it is supposed that they pass from tree to tree, or from orchard to orchard, upon the wing. Sometimes, when jarred from the tree, they will open their wings, and instead of falling, will come down at an angle, and light on some distant part of the sheet, or on your person, or sometimes even fly off to another tree. I have never seen them use their wings in passing from one part of the tree to another. In cool weather they walk about deliberately, but in the middle of hot days they are in a greater hurry, and fairly run. In cold, wet weather they are perfectly quiet, and are concealed under portions of bark, or in the crevices of old wounds or knots in the body or large branches of Plum-trees. Like other insects, in their last or winged state, the object of life is to arrange for the continuation of their race. In their larva or grub condition, they were nearly all stomach, and eating occupied their entire time; now, they have no stomach of any account, and they scarcely eat at all; consequently, they soon become exhausted, and towards the last are but mere shells.

The mark upon the fruit made by the Curculio is crescent-shaped, (and from that circumstance she is sometimes called the Turk,) and looks like the indentation of the little finger nail of an infant, and the reason it is so is, that the insect, while making it, remains standing on the fruit in the same position, only moving its head. When this crescent-shaped incision is completed, she introduces her proboscis its full length, from the center of the crescent towards where she stands, and immediately under the skin of the fruit, and at the bottom of this puncture

enlarges, so as to be suitable for the reception of the egg. This done, she turns and deposits the destined egg at the entrance of this tube; then turning again, with her proboscis pushes it gently to its proper place. What remains now is to secure the precious deposit from any danger from exposure to the air or weather, as would be likely to occur by the growth of the fruit opening the wounded part. This she does by carefully plastering up the entire incision by a kind of wax, of which she seems always to have the requisite supply. I have often, when watching this operation, and especially at that part of it when her proboscis is buried up to her very head, been struck with her resemblance to the woodcock when his beak is entirely imbedded in the ground.

The Curculio seldom deposits more than one egg in a fruit. Whether the duplicates or triplets that are sometimes found in our fruits belong to the same mother, is hard to say, but I suppose not. If a Curculio, however, is confined in a bottle with but one plum, she will puncture it all over, so that it will sometimes have the appearance of a nutmeg-grater. The time occupied in each operation is eight or ten minutes, and is repeated some twenty times each day for several weeks.

In the early part of the season, while the weather is cool, the Curculio egg will not hatch in less than ten days or two weeks, and any time during that period it may be taken out with the point of a penknife, or, what is better, a rather blunt toothpick, or it may be broken by pressing with the thumb-nail over the spot where it is deposited, and if your ear is a right good one, you may even hear the snap. In either way you may save the fruit; the wound soon grows over, scarcely leaving a blemish. It is well to know this, especially if you have young trees bearing for the first time, and you are anxious to test the fruit. It can even be done repeatedly; but remember, it *must* be done before the hatching, and in very warm weather this takes place very quick—even as early as four or five days—and the moment the young insect is free, it makes its way rapidly towards the heart of the fruit, leaving a pathway at first so fine as hardly to be visible. If you see *gum* about the orifice of the wound, it is too late, the mischief has been done.

Fruit punctured by this insect continues to grow even after the larva has penetrated to the center, but finally its vitality, if it is *stone* fruit, becomes destroyed, and it falls to the ground, though not till the young insect is almost full grown.

With the Cherry, the fruit matures almost as soon as the grub of the Curculio, and those who eat the first that appear to be ripe, will often encounter this worm, and it is needless to give all such people any description of its personal appearance.

Here the cedar birds, the robins, and even the crows come in to our advantage—let them alone. The boys will be getting out their guns, and sending for powder and shot—stop them; these are only premature cherries, generally red on one side only, and in that side a worm; let the birds have them—your crop of cherries will be the better the next year.

You will find plump, fat, full-grown specimens of the larva of the Curculio in your apricots, in your earlier apples, in the Early York peaches, and in some of your plums. Apples in June and July will be falling by millions: some are only blights—an effort of nature to guard against overbearing; but most of them will be wormy—the embyro Curculio of the next year. Pears and quinces suffer less than the above, but you may often see the crescent mark on these also; and should the more favorite fruits fail, these varieties could and would be used to prolong the race. I have seen the crescent mark even on berries in the woods, and when all the fruits fail, or before any of them are ready, she will deposit her eggs in the bark of the plum-tree itself.

However strange and unnatural it may appear, that the same insect should resort to a nidus so different as a fruit and the bark of a tree, still the testimony is too strong to the fact, to leave it longer in doubt. My own experiments have removed all the misgivings of my own mind. Dr. Fitch, in his lecture on the Curculio, at New Haven, last year, admits the fact, and seems only at a loss to know how to account for the knot itself, and supposes it to be like the cancer in the human body. The Doctor seemed to have forgotten that hundreds of insects deposit their eggs in the bark of the bodies, branches, and twigs of trees; in the veins, skin, or parenchyma of the leaves, or on the stems of the leaves—and at once, as if by magic, there arises around that egg a balloon, a ball, or a warty excrescence, that affords the double purpose of protecting and feeding the growing insect.

We must not only have a season without any fruit, but the trees also must be destroyed before we can hope to be rid of the Curculio, for want of a nidus in which to deposit her egg. But it may be asked, what is the proof of all this?

I have seen the Curculio making the crescent mark upon the tree. I have watched day after day, and seen the growth of the knot round that mark. I have seen the gum exude from the orifice. I have taken the full-grown larvæ from those knots, and could distinguish no difference between them and the larvæ taken from the Plums. I have placed them in vessels filled with earth, and kept them separate from others, and watched them during the progress of transformation. They go the same distance under the ground, make the same kind of a cell in the earth, assume the pupa condition in precisely the same way, and come out the perfect insect in the same time. You may examine the two either with or without a glass, and there is no apparent difference. Mix them together, and you can not separate them. Thus, I think it may be considered as fully proved, that the same insect that punctures our fruit causes the black knot on the Plum tree also. It seems both strange and unnatural, but the insect world is full of wonders.

The knots on certain kinds of Cherry trees are somewhat different, and are caused by another insect of the same class. The knot on the Plum tree is a warty excrescence one side, while that on the Cherry envelops or surrounds the branch. Neither are the grubs found in the same situation; in the Cherry it is usually in the pith or heart of the twig.

I have stated that the *rot* sometimes so destructive to the Plum crop is caused also by the Curculio. Some persons will dispute this proposition, and tell you that it is the weather only. I admit that the weather has much to do with it. A crop of Plums will be destroyed much sooner in hot, wet weather (what is called dog-day weather) than when the atmosphere is dry and pure. I have seen beautiful crops of fruit almost ready for the market, and when the owner was congratulating himself that he was out of danger, disappear in a few days; and this is more often the case with those kinds that grow in clusters and where many touch each other. The experienced fruit grower will watch his trees closely at this season; where he sees a plum decayed, or only a speck upon it, he will carefully punch it off with a pole, and if his experience is like mine, he will find, that in the center of where the decay commenced, will be the crescent mark of the Curculio. If that plum remains upon the tree, all the others that touch it, either directly or indirectly, will *rot* also sooner or later, according to the weather. Where the eggs of the curculio are deposited in Plums so nearly grown that the pits are becoming hard, they seldom hatch. I suppose the acid of the fruit at this time destroys the egg, and it in turn becomes a poison to the fruit. This is my theory, and whether true or not, the destruction of our Plum crops is sometimes so great from

this cause, as to call for the closest attention. Watch your trees every day, take off every specked plum at once; some even now will be found to have the grubs of the curculio in them: be careful to destroy them.

In neighborhoods where the Curculio has undisputed possession, as in most parts of this State, since the great crops of peaches, the numbers that can be taken in this way, in the early part of the season, will be almost incredible.

Some have said that the Pea-bug is the same as the Curculio, and they certainly look very much alike, but any one who will try them by the crushing process between the thumb and finger will know that they belong to different classes of insects.

If you have determined to save your fruit from the Curculio, watch your trees often. If you have some promising fruits in your gardens, run out with your small sheet before breakfast, and give your trees a tap; if you find any then, go again before you attend to business; run out before dinner and before tea. As your beautiful fruits grow and promise such luxuries in the autumn, you will become more and more interested, until, like Scott's Blinkhoolie, in the Abbott, you will come to think no life so pleasant as that passed among the Pears, the Peaches, and the Plums of your fruit garden. There is nothing so beautiful to adorn your dinner-table, after the substantial part has been disposed of, as the fruits taken from your own garden; and if you have more than you want for your own use, what is there to compare with the fruits of your own raising, *to give away?*

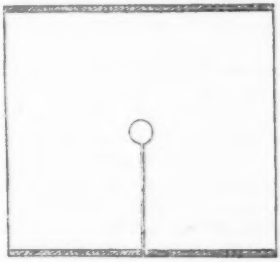
If all the fruit that falls from all the varieties of fruit trees could be eaten by our hogs, or gathered by hand and destroyed before the grubs have escaped into the ground, the curculio question would soon be effectually settled. This is an eminently practical view of the subject. An individual may do this, or it may be possible in some places to carry out a neighborhood combination; but anything further than this is hardly to be hoped for, and unless Providence interferes, the curculio is likely to continue to be one of the great trials of the fruit grower's life.

One Summer in my experience I escaped the curculio. I found here and there a few at first, but not one in a hundred of ordinary seasons, and I had a crop of fruit without trouble, and that was to me a new sensation—as if you, Mr. Editor, should experience one season's exemption from mosquitoes.

In my efforts to trace this strange circumstance to its cause, I remembered that the year before there had been *no rain in that immediate neighborhood.* We had been often threatened with showers, but they had always failed us, and the ground had become as dry and parched as the Libyan deserts. Since then I have gone through a series of experiments, and have found that the curculio will not live through its period of transformation in earth that is kept dry. The drought of the preceding season was undoubtedly the cause of my exemption from the pest that year. Had I used some of the curculio remedies so much in vogue, they might have had the credit. And all the credit they all have is due to some such adventitious circumstance. Not one of them has the least practical value. I saw a paragraph some time ago giving an account of the plan of Ellwanger & Barry, in the management of the curculio, and it is exactly the same as that I have always used, and which I believe was first described by the late Mr. David Thomas of Western New York.

It is a very simple operation, as seen by the cut—made of common muslin. White is better than unbleached; the curculio being dark, shows to more advantage. For small trees, one of five or six feet square, made of two breadths, answers a good purpose, and one person can manage it. For such trees the palm

of the hand is sufficient to give the requisite jar; but for larger trees, a sheet 10 or 12 feet square will be necessary, and it will require two to manage it. Such trees, too, will require the blows of a mallet to jar them, but you must not strike the tree directly with the mallet, or you make a serious wound. Saw off a stout



branch, leaving a stump one or two inches long, and if you will pare off the edges of this stump so as to present a convex surface, it will bear the blows of the mallet longer, and by careful management you make it last the whole season.

The beginner in the pursuit of the curculio will often overlook them, as they lay on the sheet. The little fellow folds himself up so closely and is so quiet, as to be mistaken for the dried buds, that are falling from the trees at this time; but in a few days the eyes become experienced, and the instinct that teaches them to escape observation as long as they are quiet, ceases to avail them in such a trap as this.

The next thing is the *crushing* process between the thumb and finger. Like other beetles, the curculio is hard and crisp, and requires some force to mash it—more than a fly—less than a flea. Some people have a conscience about the killing of insects—I have. I would not kill a spider nor an humble bee; neither of them would do me any harm if let alone, and I *know* they do a great deal of good.

The fruits are not only luxuries, but the necessaries of life; the curculio would appropriate them all without any hesitation if she wanted them. Man was created with dominion, and I think in this case is justified in pronouncing against them; and whenever I get a curculio fairly between my thumb and finger, I carry out this decision.

Much has been written about the curculio in this country, but most of it very crude. I have met with some of those writers that have confessed never to have seen one. Had this insect existed in Europe it would, from its great importance, have been thoroughly investigated by entomologists; but here we have had but few to devote their lives to this science, and our indigenous insects are but little known. My own investigations until recently were confined entirely to the means of preventing its ravages upon fruit; lately I have paid more attention to its habits of life—have not only summered, but wintered with it.

The larva (or worm we find in the fruit) when full grown eats its way through the skin, and immediately penetrates the ground. If the earth is sandy or loose, it will sometimes go to the depth of eight inches, and seldom less than three or

four; there it prepares for itself a kind of cell, something similar to the cell of the mud wasp, and this is its cocoon—here it undergoes its metamorphosis. In a few weeks the white maggot without wings or legs will be a black beetle, ready either to run or fly. If you have them in confinement you may feed them with leaves or any of the fruits, and you may see that they eat, though very sparingly. You will generally find them perfectly quiet, but touch them, and instantly they are full of life; this will be the case all winter, if you keep them in a warm situation, but out of doors in our climate they are perfectly dormant. Where the vast army of curculios pass the winter it is hard to say positively, but I have found them in the crevises of the rough bark of trees, in walls, and even under the shingles on the roofs of buildings.

I have often supplied the young curculio with fruits, but have never known them puncture them, or make the crescent mark; hence I infer, that the opinion of some that we have two generations the same year, is a mistake.

Those who cultivate the apricot know that it blossoms several days before the other fruit trees, and the young fruit grows very rapidly from the start, but I have never seen this fruit so early but what the curculio was ready to pounce upon it as soon as it was large enough to bear the puncture; consequently, the curculio is ready to deposit eggs many days before any of the fruits except the apricot are large enough for her, and during this period of waiting I have seen *her*, or some other beetle so near like her that my experienced eye could detect no difference, making the crescent mark on the bark of the twigs of the plum tree themselves, and that led to the subsequent investigations that proved to my satisfaction that the curculio causes the *black knot* also.

In some places but little inconvenience is suffered from the Curculio. Where I have had the opportunity of investigating, I have found the soil a stiff clay, and conclude that the larva was not able to penetrate deep enough to be secure either from drought or some other contingency during its period of transformation.

Some people plant plum-trees over water; some pave the ground under them, and say that by these means they secure crops. If so, it can only be explained by insect instinct, which in this case teaches the parent that her little ones will not be safe in falling in such places, and she therefore chooses other trees. My own understanding is so at fault in all attempts to comprehend the wonders of the instinct of insects, that I will not dispute this proposition, and to prevent others from sneering at what may seem so absurd, I will relate an instance of the instinct of another beetle still more wonderful.

The cockchaffer is a favorite food of rooks and crows; now, if the chaffer sees one of these enemies approaching, and has not time to escape, instead of simulating death, as the Curculio does, by drawing up her limbs and trunk, and seeming like a little round bug, he will sprawl his legs out at full length, and look for all the world just as a dead chaffer ought to, knowing, from instinct, that rooks will not eat bugs unless they kill them themselves. After that, let man stop all his nonsense, of boasting of the superiority of human reason. But the HORTICULTURIST is not big enough, and I must stop.

In visiting the New York markets, I see fruits from almost every part of our country. The apricots, peaches, plums, and early apples from Georgia, the Carolinas, and Virginia, have been marked by the Curculio. Later in the season, when the same fruits come down from the north, the same unmistakable mark is visible. Every year a large portion of the apples are what the country people call gnarly—have been tampered with by the Curculio; many of them stung in several places, and so misshapen in consequence, that but a mere section of the apple will

have a natural appearance. Our whole fruit crops seem, in some near future, to be at the mercy of this little insignificant insect, so small that it takes near 25,000* of them to weigh a single pound. And the question arises, What can be done?

My mode of managing, if properly carried out, will be successful, but it is very laborious, and but few will persevere.

If you have large orchards of apricots and plums, when the soil and climate suit these fruits, the prices they will bring you will justify the expense of protecting them from the Curculio. If you cultivate cherries and apples, the jarring process is impracticable where the trees are of any size; in this case, be sure to have your stock under the trees as much as possible when the stung fruits are falling.

If any of my readers choose to try the various nostrums so highly commended by their inventors, all I ask is that they shall report fairly—don't jump at conclusions that may mislead others. And let every one remember, that Ellwanger and Barry have men employed throughout the Curculio season, in protecting their fruit by this jarring process—that they do protect it by this process—and not depend upon any thing else.

[The doctor's article is so long as to preclude remarks for the present.—Ed.]

THE YELLOWS IN PEACH TREES.

BY P. BARRY, ROCHESTER.

The communication of Mr. Reid in your March number, reviewing the proceedings of the Western New York Fruit Growers' Society at its late annual meeting in Rochester, has directed my attention to the report of *The Country Gentleman* upon which Mr. Reid's strictures were based. The remarks on the subject of the yellows, attributed to me in that report, are as follows:

"P. Barry's opinion is that the yellows is *not contagious;* has had trees from a region badly affected, which, planted on good ground, became healthy—would, however, advise none to plant them. The cure of the yellows seemed to be a good fertile soil, and the cause of it a poor worn-out soil. He thinks the young peach trees do not have the yellows in New Jersey until they are 3 or 4 years old."

The reports of the *Country Gentleman* are usually remarkable for their accuracy, but I am constrained to say that this one is incorrect in several particulars. It is true the fault may in part have been mine in not expressing myself clearly; but, at all events, I shall now state what I at least intended to say.

1st. I did not intend to say that "I had trees from a region badly affected, which, planted on good ground, became healthy."

I stated that I had frequently obtained trees from parts of the country where the yellows were said to exist, and that these trees had never shown any signs of the disease in our grounds. The question was asked me then if I would recommend the purchase of trees from nurseries when this disease was prevalent, and I said I would not.

* The arithmetic in the first No. was not correct.

2d. I did not intend to say that a good fertile soil, or good culture, or both, or any thing else, would *cure* the yellows; for I think that when a tree is once affected with that malady it can not be cured; but I recommended them as *preventives*. My opinion as to the cause of the yellows is stated in the following report from the *Rural New Yorker*, and I also stated the same views before the Progressive Gardener's Society last fall in Philadelphia.

"Mr. Barry thought the yellows not contagious. Some have supposed that the disease is communicated by the pollen of the flower. Mr. B. thought the cause to be a poor, impoverished soil, and general bad management for a series of years, which develops the disease and makes it constitutional."

Now I am not dogmatic on this point. My opinion was asked, and I gave it, as I usually do, for what it is worth. I can assure Mr. Reid, however, of this, that I had no desire to injure his business, or that of any other nurseryman in New Jersey.

If I wanted peach or any other trees that Mr. Reid had, I would have no hesitation in buying from him, and I might say the same of others in New Jersey. I think I may also take the liberty of saying for the Fruit Growers' Society of Western New York, that it never has, in its discussions, shown the slightest disposition to favor the nurserymen of one portion of the country at the expense of the other. Their published reports will bear me out in this. The question of "yellows," like other *diseases*, as this has been supposed to be for half a century or more, was considered a legitimate subject for discussion and inquiry in all its bearings.

Mr. Reid has been for once in his life too sensitive, and I regret it, because he is one of those nurserymen whose reputation and standing should place him far above those petty jealousies which, of late years, have been too frequently manifested. Our great country, divided as it is even, affords scope enough for us all. Let us live together and work together in harmony, and when we differ in opinion, as we may and must, let us do it in a manly and friendly way. Leave the wrangling to the politicians.

[We respond heartily to Mr. Barry's closing sentiment; a sentiment which we have time and again endeavored to impress upon our readers. "Let us live together and work together in harmony." In nine cases out of ten, a little friendly explanation, received in a kindred spirit, will set in a proper light what would otherwise seem dark and obscure. Mr. Barry is one of the last men to leave a friend to the incertitudes of a false impression, and Mr. Reid is one of the last not to accept an explanation. Mr. Barry's name has been so long absent from pages over which he once so fitly presided, that we welcome it back again with peculiar pleasure. The spell that held his tongue in silence having been broken, we hope he will speak again, and often.—Ed.]

STATISTICS OF GRAPE CULTURE.

BY WILLIAM A. WOODWARD, MORTONVILLE, ORANGE COUNTY, N. Y.

The past winter, though in general moderate and pleasant, was characterized by two remarkably cold days, said to be the coldest for thirty years. Not having seen the "oldest inhabitant," I am unable to give you his opinion on the subject.

In the early part of February, in writing to a friend, I stated that "the new varieties of grapes *appear* to do well here, (latitude 41° 30′ N.) I am keeping records for future publication," etc. The observations made within a few days (April 10th) as to the effects of the frost, (which were unknown to me at that time,) enable me to state positively the condition of vines which were left in the open air during the winter of 1860–61. The thermometer indicated, January 13, 1861, twenty, twenty-nine and a half, and thirty-six degrees below zero at three localities in this vicinity. My residence is in the Highlands of the Hudson, at an elevation of about four hundred feet above the Hudson River. On the eighth of February the weather was again at near the same temperature, cold enough to test in the most satisfactory manner the hardiness of our native grapes. It may be received as an axiom, that all such as withstood this test are hardy beyond dispute. The two cold terms alluded to were of short duration, and were succeeded by moderate, clear weather. Undoubtedly the sun shining upon the frozen plants had as much to do with their injury as the extreme cold itself. This is the experience of many intelligent persons. My attention was called to it a year ago by H. W. Sargent, Esq., who had exposed one of his favorite Evergreens. He found that the south side of the tree was injured by the sun's rays, while the north side of the same tree was in no manner hurt. Again, Mr. Cornell, of New Windsor, informs me that an Isabella vine set on the north side of his barn, where there is seldom a ray of sunshine even in summer, has come out unscathed; while his vineyard of the same grapes is almost if not quite destroyed for fruiting the coming season. On my own grounds, the more tender varieties are not injured where they laid down upon the ground, and were partly covered with leaves or snow, which was sufficient to shield them from the sun while in a frozen state. I have made a list of such grapes as I am cultivating, and the condition they were in, to show the effects produced upon them, which you are at liberty to publish for the benefit of your readers. If others similarly situated will do the same, we shall soon gather a large fund of reliable information upon grape culture which will be of great value.

The following I class as *perfectly hardy*, exposed to the open air, tied to a trellis, and not protected in any manner. They are three years old, and grew last year strong, healthy wood, which was pruned down to four feet last fall, and intended for fruiting in 1861:

Clinton—wood of last year's growth, 15 feet, very strong, ripe early. Now green and healthy to the ends.

Hartford Prolific—growth 10 feet, strong, ripe wood. Uninjured.

Concord—growth 15 to 18 feet, strong, vigorous, ripe wood. Uninjured.

Perkins—growth 20 feet, robust, extra large ripe wood. Uninjured.

Early Northern Muscadine—growth 16 feet, strong and vigorous. Uninjured.

New Native of Orange Co., (described elsewhere.)—Fruit ripened the first week in September, and the wood fully ripe to tips by the first of October; exposed to twenty-nine and a half degrees *below zero*, as indicated by a registering thermometer. Uninjured.

The following I class as *half hardy*. The fruit for 1861 is entirely killed; but ordinarily they stand our severe winters, and bear fruit. I have found, however, that whenever this class of vines are laid upon the ground and covered with earth, the fruit of the following season is fine, and ripens several days earlier than if exposed on the trellis during winter: Isabella, Catawba, Diana, To Kalon, Union Village, Garrigues, American Hamburgh, Hyde's Eliza. My advice to cultivators north of Maryland is, to cover these varieties every fall.

The following varieties I find were covered purposely, or by accident, and of course are in good order now: Delaware, Anna, Rebecca, and Lenoir.

[The above statistics are of much value, and we should feel obliged to any of our subscribers who can furnish carefully collated observations on the same subject. We have seen the "oldest inhabitant," and he told us confidentially that the cold was the greatest he had experienced during his long life. He said, moreover, that the weather was "very queer;" by which he no doubt referred to its extremes and sudden changes. The weather last fall was unusually unfavorable for the ripening of wood, and the winter exceedingly trying; under the operation of these two causes, the destruction has been great. When it is understood that it is not the simple freezing that does the mischief, it will be easy to comprehend why Mr. Cornell's vine on the north side of his barn escaped. There are some kinds in your list that might have been injured without much harm to any body. In a locality quite as cold as yours, and much more trying, we recently examined a number of kinds, and found uninjured, the Diana, Delaware, Concord, and Hartford Prolific. The Isabella, Catawba, and Rebecca were killed "root and branch."

THE UNION VILLAGE GRAPE.

(*See Frontispiece.*)

BY THE EDITOR.

Our *Frontispiece* this month is a very fine bunch of the Union Village Grape, from a specimen grown by R. S. Skeel, Esq., of Newburgh. This grape is a seedling of the Isabella, and was originated by the Shakers of Union Village. Mr. Longworth, we believe, first brought it to notice, and it has frequently been described. The vine is a vigorous grower, making handsome, short-jointed wood. The whole plant, indeed, wood, leaves, and fruit, are of unusual size. The bunches are the largest and most showy of all our native grapes, unless the Ontario should prove to be distinct and share this distinction with it. The bunch is compact, and often shouldered, and the berries well covered with bloom. It is sweeter and better than the Isabella in quality, and at least a week earlier. The vine, when young, does not in some places fully ripen its wood to the end, in consequence of its rampant growth, and may need protection; but generally we think it will prove hardy when the vine has attained a little age; certainly as hardy as the Isabella.

FERNS. REMARKS UPON RAISING FROM SPORES, ARTIFICIALLY AND OTHERWISE.

BY DANIEL BARKER, HARTFORD, CONN.

As many of the finest perennial, and all those with an upright rhizoma, with the annual kinds, can only be propagated from spores, I will point out the ways by which we have been very successful with most of the delicate and rare kinds, both of the tropical and hardy varieties.

A seed pan (size immaterial) is filled to within one inch of the top with rotten wood and sphagnum moss, upon which is placed half an inch of light loam and leaf mold, with a liberal mixture (say one-fourth) of sharp sand, and a portion of sphagnum mixed up with the soil. When the pan is prepared, let it be well watered, and left in a shady place for several hours; after which the spores may be scattered upon the surface. The pan should then be placed under a hand or bell glass, (in a shady place in the hothouse,) and as much air excluded as is practicable by packing wet sphagnum round the bottom of the glass. Managed in this manner, the surface of the pans will not require watering for a considerable period, which will be found to be a great advantage, inasmuch as by frequent waterings many of the spores are disturbed and destroyed. It is very desirable to water as little as possible until the spores appear in the "Marchantia" form; bearing in mind that the soil must never be allowed to become dry, as that would be *certain destruction* to many of the more delicate kinds, after having been subjected to a damp atmosphere for any lengthened period. Under the above treatment, more especially if the spores have been recently taken from a green specimen, most of the kinds will be certain to grow, notwithstanding twelve months may elapse before some of them may germinate.

Another method, and by which we have raised thousands, is to take some seed pans, in which place some half-decayed pieces of wood or bark, with a portion of soft friable loam and sharp rough sand well mixed together, placing them in any shady part of the house wherein ferns are grown, being careful to keep the surface always damp, and the spores, which are constantly flying in all directions about the house, will germinate from time to time upon the surface of the pans, without any further care whatever. We have been successful in propagating many of the more rare and delicate species by this method, when all other efforts have signally failed.

A CONTINUATION OF A FEW SELECT KINDS WHICH REQUIRE THE TEMPERATURE OF THE GREENHOUSE.

Adiantum capillus venerus; A. Mortzianum; A. pedatum. This last is one of our most beautiful native ferns, and one of the most graceful when under a good state of cultivation, either in the temperature of the greenhouse or hothouse, or in the portable plant case. A. reniforme; a very remarkable kind from the Peak of Teneriffe.

Asplenium appendiculatum; A. dimorphum; A. obtusum; A. flabellifolium; A. lucidum; A. septentrionale. Botrychium lunaria, (*Osmunda lunaria.*) Cheilanthus Alabamensis; C. fragrans; C. tenuifolia. Gathea dealbata; G. medularis: two very interesting and beautiful ferns from New Zealand; somewhat rare. Cystopteris bulbifera, (a particularly interesting native fern;) C. regia. Davallia Canariensis—the singular and beautiful Hare's-foot fern from the Canary Isles; D. pyxidata. Dicksonia Antarctica; D. lanata. Doodia aspera; D. Blechnoides;

D. caudata; indispensable to the most select collections. Gleehomia dichotoma, (rare.) Goniopteris pennigera. Gymnogramma leptophylla; G. rutæfolia. Ibymenophyllum dilatum; I. Tunbridgense; exquisite. Lastrea decomposita; L. cristata; L. glabella. Lomaria Alpina; L. discolor; L. lanceolata. Niphobolus rupestris. Notholæna Canariensis; N. lanuginosa. Phegopteris alpestris; P. dryopteris; P. rugulosa (rare); P. vulgaris. Phymatodes Billardiera. Polystichum aculeatum; P. aristatum; P. falcinellum. Pteris Cretica; P. longifolia.

The above is a selection of a few of the most interesting and easily cultivated of this beautiful class of plants, which will flourish in the temperature of the greenhouse and conservatory. Much might be said in detail upon the elegant forms, native habitats, etc., of the above named genera; but to enter upon full particulars of each would occupy more space than in all probability would be allowable. Suffice it to say, the selection is very choice, and may be thoroughly depended upon.

Meanwhile should any of the readers of the HORTICULTURIST require any additional information respecting the above, or any of the exotic kinds which may hereafter be named by ourselves in the HORTICULTURIST, such information will be cheerfully given, privately or otherwise, so far as our practical experience will enable us to do so.

EDITOR'S TABLE.

To Contributors and others.

Communications, Letters, Catalogues, Periodicals, &c., intended for the perusal of the Editor, and packages by Express, should be directed to the care of C. M. Saxton, 25 Park Row, New York. Exchanges should be addressed to "THE HORTICULTURIST."

SEEDLING VERBENAS.—The seedling Verbenas received last month, for which we gave credit to Mr. Pentland, (and which he disclaims,) were from Mr. Dreer, as we have since ascertained. Mr. Dreer will please accept our thanks, and excuse the mistake inadvertently made.

BRIGHT'S GRAPE-CULTURE.—We learn that Mr. Bright has in press a new edition of his work on the grape, which will contain some forty pages of additional matter, developing some new views on his favorite subject. We shall look for it with much interest. It will be for sale by Saxton & Barker, 25 Park Row, New York.

SEEDS FREE.—It was recently stated by one of the members of the Farmer's Club that Mr. I. W. Briggs, of Macedon, Wayne Co., N. Y., was engaged in the seed business. This is not so. He distributes seed *free*, and much better than can be got through the Patent Office. Those we received last year gave us much satisfaction. By sending a postage stamp, (three cents,) he will return you seeds such as you can not very easily get elsewhere, many of them not being known to our seedsmen. He competes with the government, and thus far has the best of it. We mean to try him again.

ILLINOIS STATE AGRICULTURAL SOCIETY.—This Society, at its annual meeting, appointed Chicago as the place for holding its annual Fair for 1861. The cash premiums amount to $20,000. That sum ought to insure a good show, if all the other arrangements are made in a like liberal spirit.

PROGRESSIVE GARDENERS' SOCIETY, PHILADELPHIA.—The stated monthly meeting of this Society was held at Druids' Hall, on February 11th; the President in the chair. Communications were read from J. W. Degrauw, Esq., Brooklyn, N. Y., and Dr. Geo. Pepper Norris, Wilmington, Del., and ordered to be inserted on the minutes.

The election of a Secretary for 1861, which had been postponed, was taken up. Before resigning, R. R. Scott made some remarks respecting the motives and objects of the Society, and nominated Wm. Saunders for Secretary, who was unanimously elected.

Rotation of Crops in the Esculent Garden.—This subject had been set apart for consideration, and James Jones, gardener at Girard College, read the Essay, which was afterwards discussed by Messrs. Saunders, Stephens, Miller, Eadie, Pettigrew, Lazenby, Scott, and others. The principles on which the rotation of crops depends were fully explained. Mr. Jones laid down his own mode of operation, which was, to divide his ground into five portions, reserving one-fifth for the permanent roots, such as Rhubarb and Asparagus. The remaining four parts were managed by a four-course shift, with mixed culture. The four main crops were—1st year, *Potatoes* and *Turnips*, followed by *Cabbages*, &c.; 2d year, *Corn*, *Squashes*, and *Pump-*

kins, with *Lima Beans*, *Lettuces*, *Cucumbers*, and *Radishes*, as intervening crops; 3d year, *Peas* and *Onions*; and, 4th year, *Parsnips*, *Carrots*, *Salsify*, and deep-rooted plants, with minor crops intervening. The entire routine of culture was clearly laid down, and the method satisfactorily shown to be at once convenient and profitable. Should you desire a full report, it is at your command.

The next subject for the consideration of the Society, at the stated meeting of March 11th, is, "Propagation of Plants by Cuttings." Our meetings are open to all, and all interested are invited to take part in the discussions.

[We should be glad to have the discussion.—ED.]

SEEDLING POTATOES.—The following extracts from a letter from a friend who has had large experience in raising seedling potatoes, will be read with interest:

"There are few things eatable better than a good potato, and nothing worse than a poor one. The poor bear quite too large a proportion to the good. Indeed, a great many people never saw a good potato. Their education in raising, or buying, or cooking, or eating the potato, has been sadly neglected. There is no one branch in agriculture in which there is more room for improvement, than in the cultivation of the potato. It is an article that may be immensely improved to the great advantage of all classes, consumer as well as producer. By being made better, it will become a larger article of food. To this improvement are needed a knowledge of the constituent elements of the potato, and its careful cultivation by the light of this knowledge. Cultivation comprehends it all, and will do the thing. Careful and intelligent cultivation will improve any variety, while careless and ignorant cultivation will spoil any of the best varieties.

"There are but few know how a new seedling potato is produced, nor the trouble and expense to perfect them. The seeds of the potato-balls are first planted in a hot-bed in early spring, and transplanted at a suitable time; and they produce small potatoes, in size of peas to walnuts, of as many varieties as seed planted the first year, and these are planted again and again, till the fourth harvest; then those that promise well are selected and the others thrown away. Those that look and yield well, are not always good for the table; and now comes the planting to test the table quality—the fifth. It very seldom happens that the three most important points of a potato are combined all in one potato—healthy, productive, and good for the table. Such is the case with the new Bulkeley Seedling, as testified to by all who have raised and used them. But few potatoes have given so much satisfaction. The yield the fifth year was 544 bushels per acre, and the sixth year 1860, was 584 bushels per acre, perfectly free from all disease, and will now rank with any potato on the table, in flavor or being dry and mealy."

PATENT OFFICE REPORT FOR 1859.—We have already announced the receipt of this Report, with an intimation of further notice. We turned the subject over to a friend of leisure, whose criticisms, somewhat sharp, but to the point, we herewith append. We have long been of opinion that the appropriations of seeds, etc., have been abused, and that a reform was much needed. We hope the new head of this department will make it.

"There is so much to be said about the use of money appropriated by Congress for the advancement of Agriculture, that we are almost forbidden to mention the subject for want of room, but we feel impelled to say something at this time.

"The following resolution passed the House of Representatives June 13th, 1860: '*Resolved*, That there be printed, in addition to the usual number, three hundred thousand extra copies of the Report of the Commissioner of Patents on Agriculture, for the year 1859; fifteen thousand of which shall be for distribution by the Interior Department, and two hundred and eighty-five thousand for the use of the House of Representatives.' We do not for one moment doubt that

even this loosely gotten up report would be of great value to the farmers and gardeners of the United States, did any considerable number reach them. We speak but well-known facts when we say that thousands of these books are given to men who do not care a straw for agriculture. They are laid away and forgotten, with other rubbish of the house or office. Others of these books, printed at public expense, and intended to be handed directly to those to be benefited, are sent to book stalls in the cities and sold for a mere song. There are hundreds suffering for the need of aid in agriculture who can not get even the pittance of one of these Reports. We are not habitually given to fault-finding, but the evils connected with the use of the moderate sum appropriated by Government are so great, and the money falls so far short of accomplishing its purposes, that we feel anxious to do our share in lessening the former and insuring the latter.

"Commencing in 1839 with an appropriation of $1000, the Government increased this to $105,000 in 1856, and reduced it to $60,000 in 1858. A considerable portion of the money was expended for ordinary seeds and plants well known in all parts of our country. The mails have been burdened with packages of seeds which could be duplicated in almost every grocery store in the Union. We have received from the Patent Office quantities of China, Refugee, and Kidney Beans, various sorts of Peas, etc., of good kinds, but which, being easily procurable almost every where, there existed not the slightest reason for using government money to send out and distribute. Some very poor seed has been enveloped and sent out, as well as seed quite too closely related by admixture with seeds of plants known to all good gardeners and farmers as weeds. These latter *may have* their uses, but they are not so well understood as to make us believe that government money should be appropriated to disseminate them. Good and valuable seeds also have been sent out, but the quantity has been too limited in proportion to commoner sorts so industriously distributed. Of the better sorts, may be mentioned wheat, Sorgho, and some kinds of grasses. None can deny that the Government has done much to advance agriculture by means of these annual appropriations, but not a tithe of what it should have done. Can we forget the fate of the Sugar Cane appropriation, and the stupid blunders connected with the attempt to renew the supply of cuttings in Louisiana?

"Even so small a matter as the Drainage of a marshy field is so blunderingly conducted, that from the Report of 1859 we learn that, 'unfortunately, there was a want of adaptation in the manner of laying the tiles upon the yielding, marshy base, and the continuity has consequently been interrupted by occasional depressions.' Nor is this all. In the Report for 1858 we learn that, in order to secure to the people of this Union many valuable plants and seeds brought from abroad, and to propagate many found at home, a propagating house was built, but in such a manner as to put to shame any projector who has the slightest knowledge of what a propagating house should be to secure the best results. The house was made eleven feet high at apex, with the central roof opaque, so that plants have the sun but a portion of the day, proving detrimental to the tender ones, the height at the center forming with low sides a steep roof, which has the effect of 'drawing up' or 'spindling' the plants. Then as to heating, how little credit does the plan adopted reflect on those having the direction! None but the crudest cultivator would think of employing coarse materials to make up by their fermentation the heat essential to the development of a seed or cutting into a healthy plant. It is true that plants have been grown to be distributed, but they are not samples of the very finest plants, such as could have been grown by the use of a genuine and well-regulated propagating house, such as should have been built as a sample to every propagator who chose to examine it.

"According to the description given in 1858, in cellars beneath the house was placed one foot in depth of dried Chinese Sugar-cane stalks; over that ten inches of horse manure. The Report of 1859 says, 'Decomposing vegetable matter, covered with a portion of nitrogenous material, might be adapted to general use, were the process of decomposition susceptible of being controlled at will; but so variable is its progress, and so dependent upon external influences, in a

ratio inverse to the requirements within, that the vicissitudes of temperature proceeding from it are such as none but hardy plants can endure. The volatile emanations are likewise in excess in this process, insomuch that even those plants which become accustomed to, and prove capable of sustaining an atmosphere so highly stimulating, may suffer when suddenly withdrawn from its influence and exposed to the open air.'

"What excuse is there for all these blunders? Why need our Government be so blind to its needs when it authorizes the expenditure of money? Shall we answer, because in the whole Union there are no men capable of selecting and disseminating valuable seeds, draining marshy lands, and erecting propagating houses, preparing soils for feeble plants, and seeds that healthy plants may be reared? Can it be said that there does not exist a decent house in the Union which could serve as a sample? Are there no architects here capable of giving a plan of just the house needed? If not, would it not have been well to look over into the houses of France and England, which have been built for the propagation of plants from every clime? These are vital questions, and should be answered practically. Why should abuses be tolerated in government enterprises intended to benefit the people, which would not be endured in private establishments? Let us then tolerate no shams in this matter. If we are to be benefited by money given by the general government, we demand that this money be expended so that it reach the parties to be benefited.

"We are glad to note that Commissioner Bishop wisely recommends that the sending out of other than new and rare plants and seeds be discontinued, and we feel that other improvements will follow on the heels of his suggestions. Among other things, we hope that the Report will be gotten up with greater care, trimming down verbose statements, having less personal details and more positively valuable material. The essays on animals, insect pests, plants, and meteorology in the last few volumes of Reports, are valuable to the cultivator, but there is much that might be omitted.

"We learn that in the gardens at the capital there are 32,000 plants of Tea shrub from China, 250 plants Cork tree, (Quercus suber,) 5,000 plants Mahonia, (U. S.,) 1,000 plants Seedling Strawberries, 200 plants Virgilia lutea, (Tenn.,) 21 plants Camphor tree, (Japan,) 100 plants Pinus edulis, (Oregon,) 50 plants Sycamore fig, (Palestine,) 1,500 Arbor Vitæ, (China,) 150 plants Rhus succedanea, Wax plant, (Japan,) 50 plants Tung Oil-tree, (Japan,) Oodung and other ornamental trees from Japan, Olea fragrans, (used for flavoring tea in China,) 25,000 plants Grapes—seedlings and rooted cuttings from about fifty varieties of foreign and native grapes. It is proposed to attempt to get hybrids from the best foreign and our native grapes to secure a grape better adapted to the manufacture of wine.

"Quite a list of seeds is named, also plants, from Palestine, which are to be experimented on.

"The Historical Sketch of the United States Agricultural Society is in good form for preservation, but he who would be fully informed of the GRAND SHOWS and TRIALS will be obliged to trust to the newspaper reports or to his own memory.

"Considerable space is devoted to 'Grapes,' which we will review hereafter, as there are some curious statements made therein. We must also defer notice of articles on Ionian Islands, Fertilizers, etc., to some future time."

Correspondence.

IMPORTED ROSES.—MR. EDITOR: We did not expect that our article in the March number of the HORTICULTURIST on imported roses, would meet the approbation of all dealers; but we certainly did not expect an opponent from such a quarter; for we supposed that a man situated like Mr. Bridgeman, was better posted as to what was going on in his own country, and especially in his own State.

His first question is, "What nurseryman or florist neglects to produce Roses himself, and thus allows his simple vanity to get the better of his judgment?" I know of no one better able to reply to this than the gentleman himself, for he acknowledges that he imports roses for his customers. But we ask the gentleman's pardon for using the word "vanity," it should have been "ignorance."

Second. "Have not American Roses of decided merit, brought as good prices and as ready sale as new French Roses?" So far as prices are concerned perhaps they have, but they have brought no better prices than new Roses in Europe. But as to rapid sales, it is very doubtful whether there are more than one or two instances where there has been received by the producer anything like a fair remuneration.

The gentleman says that he receives new Roses in limited quantities among his importations without extra charge. Did he ever know an American nurseryman refuse to put in a limited quantity of new Roses without extra charge, provided he purchased by the hundred or thousand? We have not yet learned that French nurserymen were any more liberal to their patrons than American nurserymen.

Third. As the gentleman seems to doubt there being a place in this country where Roses can be procured of the leading varieties in quantities; we beg leave to state that we know of several, and we will name one in particular, who propagated one hundred thousand last season, and had forty thousand on hand at the close of the season, just because such men as Mr. Bridgeman import Roses instead of buying them at home. We refer to Messrs. Ellwanger & Barry, of Rochester. As to quantity, quality, or choice varieties, we refer the gentleman to their catalogues or to their grounds.

Further, they have been selling these Roses at $160 per 1000, which is less than the price stated by us, and less than Mr. Bridgeman says he can import them.

If Mr. Bridgeman will send his orders to Ellwanger & Barry, one, two, or three months in advance, the same as he has to in sending to France, we think he will find his orders filled promptly, and with choice varieties; those known to be good of all classes.

Fourth. "Where can Roses be purchased for seven cents apiece in France?" Well, we thought we would tell, but upon further consideration we think we had better not, as we may make something out of gentlemen who *pretend not* to know; but certain it is that Roses have been and can be still bought in France at that price, and almost every season for four cents. If Mr. Bridgeman doubts us we will give him the names of several gentlemen who will import them for him at seven cents; he of course paying freight, &c.

We have always objected to putting down the price of nursery stock of any kind, and we thought that our statement was high, and on some items, nearly double what it sometimes costs; for instance, freight from Havre to New York, was per steamer, when very few import by steam, mostly by sailing vessels, which costs much less.

Mr. Bridgeman is curious to know what I mean by Angers being the Rochester of America, why simply that Angers is supposed to be the great nursery depot of France, and Rochester the great nursery of America, as well as the largest in the world.

As to any nurseryman in this country supplying 20 to 200 of one variety, and to allow the purchaser to name those varieties, and certainly if he ordered one or two hundred of each, there is probably no nurseryman in this country or in Europe, that could fill such an order without buying of his neighbor. We doubt very much whether Mr. Bridgeman ever had an occasion to give such an order. And we wish the gentleman to understand that we do not say that Roses can be purchased in France at $70 per 1000, if the nurseryman is restricted to certain varieties, neither can he purchase large, strong plants of Hybrid Perpetuals in this country for $160 per thousand, under the same rule. But if he gives his order for so many thousand Roses, assorted varieties, then they can be had here at $16, and in France at $7 by the thousand.

ANDREW S. FULLER.

MR. EDITOR:—At what price would it be profitable to purchase bones per pound as a fertilizer? We are frequently urged to save and collect such materials, and prepare them for the improvement of certain crops. I presume many of your readers would be equally pleased to receive a direct, practical answer to the above question. If it will pay to take the trouble to gather the bones scattered over a farm or about a town, it must be economy to pay *something* to have them collected to order.

Very respectfully,

N. Y., April 9, 1861. A SUBSCRIBER.

[At the rate of $30 per ton, it will pay you to collect all the bones you can find. Bones about the farm or the town, or from the butcher, are worth a good deal more than the crushed or broken bones usually bought at factories, since the latter have in most cases been boiled, and have thus parted with important elements of fertility. Our advice to you, and all others is, to collect all the bones you can find.—ED.]

PETER B. MEAD, ESQ.—At our last interview you urged me to describe a grape which has come under my observation the past year, in the neighborhood of my residence. My unwillingness to do so heretofore has been from a desire to make further examination of its habits, so as to preclude any error or mistake in its description.

The vine is a native seedling, Vitis labrusca. The wood casts its bark in long strips; it has enormous tendrils of sufficient strength to bear the weight of a man; is of a dark mahogany color; compact, hard, close grained, medium jointed, ripening to the topmost shoot before frost in 1860; propagates readily. Leaves large, three to five lobed, heart shaped, strong nerved, yellowish green above, tomentose or wooly beneath. Bunches large, very compact, and shouldered, (resembling in form the engraving of the Delaware published by Dr. Grant,) weighing from half a pound to one and a quarter pounds. One bunch measured by me was in length six and six-tenth inches, in breadth four and seven-tenth inches, and contained about one hundred berries. I did not count them. Berries dark blue or purple, large, round, holding firmly to the bunch; sweet, juicy, with an aromatic flavor. Skin thin, with fine bloom, dotted with lighter spots, easily removed by the touch. Flesh free from woody fibre or toughness. No mildew or rot visible. Ripening from third to tenth September, 1860, a wet season, when cultivated varieties generally did not ripen.

This vine grows in a swale on the north side of a stone wall, elevated say four hundred to five hundred feet above the Hudson River; is protected on the west by very high land, the sun rising on the twenty-second of November twenty-seven minutes later and setting one hour and fifteen minutes earlier than on level land, reducing the day from nine hours and thirty-four minutes, to seven hours and fifty-three minutes at that point, a difference of one hour and forty-two minutes. The situation is exposed to cold north winds. The thermometer indicated twenty nine and a half below zero on the thirteenth of January, 1861. The latitude is about forty one to thirty North.

The age of this vine is about seventeen years. It has borne regular crops of fruit for fourteen years without fail, and has never been manured, cultivated, or protected.

In 1859 the crop was one hundred and fifty pounds. During the fall and winter following, the water found its way along the old wall, and washed the earth from this vine so as to lay the roots bare. The product of 1860 was about one hundred pounds.

The soil is strong loam, about four or five inches, with a sub-soil of clay intermixed with gravel (broken stone) and friable sandstone five or six inches. Under this is rock and hard pan.

The wood is now in the hands of a propagator, and as soon as I am permitted to do so I shall be pleased to place one of the roots in your possession, that you may compare it yourself with the varieties which you are cultivating.

My comparison of temperature on the thirteenth of January, between the situation of this vine and at my house, shows a difference of eight and a half degrees colder, which may be accounted for in the fact that there is about one and three quarter hours less sunshine during the day.

Yours most truly,

Mortonville, Orange Co., N. Y. W. A. WOODWARD.
April 10, 1861.

[Thank you for your description. In some respects it reminds us of the Union Village. Its hardiness seems to be undoubted. We shall be obliged to you for the vine; but, in its season, be so good as to send us a bunch of the fruit. With the above came a request that we would give the grape a name. It having originated on the Woodward farm, we accordingly exercise our prerogative, and name it the *Woodward Grape;* a name on which we hope it will cast no discredit. Our readers shall have our opinion of it when we receive the fruit.—ED.]

MR. EDITOR:—I sent you an article some time ago in reply to Mr. Veitch, and since then I see in the HORTICULTURIST for April, an article from Mr. Henderson, of Jersey City. The article in question covers the whole ground of both their remarks; for they both unknowingly admit that I am in the right; and had they understood the article in question, they could not have found any fault with it. There is one remark of Mr. Henderson's that I must reply to by your permission. With regard to my catalogue and the "European" varieties therein mentioned, I did not condemn all the foreign varieties, by no means.

Again: I am not so green as to throw away the *names* and *varieties* while the *public taste panders* to them, and until we can change this "opinion," shall still keep them; but I would say that, when my customers send for Verbenas, (unless they select them,) I send very few of the *foreign* ones, unless *superior* to others of AMERICAN growth; for I grow very many not upon the catalogue, and many now there I have but a limited number of. Then, I assure you, I perhaps import as many as Mr. H., but find so few worth retaining, I shall not import many more.

With regard to the Verbena degenerating by growing from cuttings, it is simply absurd for Mr. H. to state such a thing. If such is the case, why are not those *very old varieties* mentioned by him, totally lost sight of? for they have been propagated *ad infinitum* to the present time. So he might say of any other plant, it degenerates by being grown from cuttings. That won't do, Mr. H. It may be the case with those "European varieties," but not so with the American.

Mr. Editor, the whole secret is this, there is money made out of those imported varieties, and John Bull gets the blame when they are not good, because the responsibility is thrown upon him; for he describes them, and not us; but when we send out one of our own, we have to take the responsibility.

[The Verbena question will come right yet. We have no words but those of commendation for a meritorious plant, no matter where raised; but we think that, as a general thing, no

adequate encouragement has been given to the production of American seedlings. We may differ as to the cause of this, but the fact is patent enough.—Ed.]

Editor Horticulturist:—The peaches in this neighborhood, which is along the bay, have not been hurt by the winter; but west of here I understand about half are killed. This reminds me of an article that was going the rounds of the papers, saying that to always have a crop of peaches was to graft on the plum—would this hinder the peach which forms in the fall, from freezing in the bud?

About fifteen years ago, our people commenced stripping the Damson-trees of their fruit in a green state—now we can't raise them for the black knot—can't say that was the cause—but we had fine healthy trees previous to that time, and plenty of fruit.

Is there such a thing as an apricot turning to a pear? A neighbor of mine tells his tale—that he planted some seed of the apricot. Some few years after he moved, and took with him the trees, which were in bloom at the time; of one these the top died, and sent up a shoot from the root which proved to be a pear, which fruited the third year; nearly a Seckel, with few seeds and hardly any core. The pear may improve as the tree gets older. This tree is opposite my window; saw it when it was planted; is a very handsome tree; the owner refused ten dollars for it at three years' old; and I would like to believe that it came from the root of the apricot, if I knew that such a thing had ever happened before.

Yours truly, Pleasonton Hamon.

Near Dover, Del., Feb. 25, 1861.

[Grafting on the Plum will not save your peach-buds from freezing. There is no such thing as an Apricot turning to a pear; and if your neighbor is nursing his tree with that idea, he is nursing a great delusion. Natural laws are fixed beyond all such changes as that.—Ed.]

Mr. Editor:—There is scarcely a horticultural journal I receive that does not contain many complaints from different sections of the country, of the difficulty of making Roses live and bloom the first year. Those complaints are generally made by novices, who think the Rose should grow like a hill of corn. Once planted, he expects a crop; but this is not so. Roses require a little more attention than many bestow upon them. Now let us take a look at the other side of the question. Roses are grown in greenhouses, in temperatures sometimes from sixty to ninety degrees. Those plants, in fact, are not fit for growing out of doors. Although they may not die, their growth is frequently so much checked that the growing shoots make but little progress after their first flowering. Roses as well as all other hard-wooded plants for outdoor cultivation should be grown in a low temperature, not over sixty degrees. But here is a difficulty: nurserymen, the greater part of them in this country, generally employ inferior gardeners, because they work at low pay, thereby saving the cent and losing the dollar. Let them take a glance at gentlemen's private establishments in every part of the country, where the best of gardeners are employed, and see how many there are daily flocking there begging to purchase plants and fruits, while the neighboring nurserymen have the same varieties, and little inquiry for them. Nurserymen would not engage a gardener from a private situation, because he could not understand nursery business. They are at a loss to know the difference. Gardeners coming to this country can not wait five years for a nursery situation; they have to take hold of the first they meet, thus leaving the best of them in private situations. Perhaps it would be well to mention, that like mechanical trades in this country, the learners become gardeners in two years. There are many such coming along in our day. These are the men that cause so many complaints of the failure of plants. A man can not become acquainted with gardening in a few days, nor can he become a phytologist. All gardeners who learn their business in Europe must serve their time in a nursery, otherwise they can not understand gardening to perfection. Perhaps it would be well to mention what difficulties they have to surmount in order to

become masters of their profession. First, when a man is recommended to become a gardener, no matter if his father was the Lord Mayor of London, he has to humble himself to the position of a working man: he must take to the spade and first learn to trench; after that he must learn to grade, mark out walks and alleys; then he must join the working men in the bedding-in of all kinds of plants and trees; again, he is sent to tie after the budder and grafter. In rainy days, during this time, he is sent to the shed making Agaricus campestris or Mushroom spawn; also the making of labels, &c. Next, he is taken to the packing sheds, from thence to the herbiscous grounds, then to the flower garden, thence to the compost-house, and then takes a step into the vinery. Next comes his turn to the greenhouse, and lastly to the propagating house, where he finishes his long term of seven years. There a man can not become a professor in two years; but in this country there are many, who do not know the differences between common soils, who are still gardeners, and perhaps writers for some of our valuable journals.

I have perhaps exceeded the proper limits on these simple matters. At some future time I will say something on the subject of Plants. I suppose it is time that a subscriber of three or four years' standing should say something, or trouble his editor a little. The above is a hint to those persons who wish to employ first class gardeners, and only offer them $25 per month.

Limerick, Maine. JOHN C. RILLY.

[You have opened a prolific subject, which might be profitably followed up. Perhaps some of our correspondents would like to continue it pro and con. We shall be glad to hear you speak on the subject of plants.—ED.]

EDITOR OF THE HORTICULTURIST:—The "Large Early York" and "George IV." Peaches are identical. The tree which Michael Floy cut the buds from, in Mr. Gill's yard in Broad Street, New York, and re-named George IV., was sold to Mr. Gill under the name of Large Early York. The Peach is a seedling of the *true original* Red Rareripe, (Morris Red Rareripe of Downing,) and was originated from seed by my grandfather. It has *globose* glands, and small pale flowers.

The original Red Rareripe is a seedling of the Grosse Mignonne of France, and was grown from seed brought out by emigrants at the revocation of the Edict of Nantes.

The Early York and Red Rareripe of Downing are both serrate, (without glands,) and this Early York has large flowers, and are both misnomers, apparently of a distinct parentage, and are both distinct from the original varieties so long ago and so widely disseminated by my grandfather and father. Latterly the word "Large" has been added to the name, so as to distinguish it from the Early York of Downing's work.

My father sent the Large Early York to Wm. Forsyth, of England, about the year 1790. Mr. F. had then charge of the Royal Kensington Gardens, where this Peach received the new name of Royal Kensington, and in an after importation of fruit-trees, my father received back his old favorite under this new title.

It is a somewhat amusing circumstance that the Large Early York, when sent to the London Horticultural Gardens at Chiswick, received no special encomiums until it was afterwards sent there under the name of George IV., when it at once assumed an important position, and was announced as of very superior quality, and the best suited to the climate of England of all American varieties; these remarkable facts not having been ascertained previously, although the same fruit had been growing there for many years under the unassuming and *less regal* name of Early York.

The original name, Early York, refers to New York. It was also called "Large Early," "Large Early Rareripe," and "New York Rareripe," and latterly has received the additional names of "George IV.," "Haines' Early Red," "Honest John," &c. It is a genuine American variety, whereas the Early York of Downing is supposed to be an imported variety.

Flushing, L. I., March 5, 1861. WM. R. PRINCE.

[The history of this Peach, though not new to us, will no doubt be so to many of our readers. So, you see, Mr. Prince, there is something in a name, after all; and what was true in 1790 is true in 1861. It is to be regretted that our fruit-books pay so little attention to the glands, flowers, and serratures, in the description of Peach-trees. Mr. Prince's article has reference to the list of Peaches presented by the American Institute, in which the word Large is appended to Early York in parentheses.—ED.]

PLANT TREES.—MR. EDITOR: More than forty years ago a family of children visited their grand-parents, then living "*a great way out*" of the city, on the old post-road to Albany, or Bloomingdale road; and from the garden they carried some nuts; and, on their return home, a brother and sister planted each a nut, and each nut produced a tree. They were nursed and cared for as children will nurse and pet a favorite plant or shrub.

The trees thus planted are large and beautiful, and have produced great quantities of fruit for more than thirty years past. A sample of the last year's is herewith sent. The old mansion, garden, and parent tree, which were below the "great hill" (Murray Hill) of Manhattan Island, have passed away. The lady, once the sister-child—my wife—who planted and raised the tree, sends you this specimen of the fruit thereof.

Feb. 14, 1861. P.

[For which we desire to return her our best thanks. The nuts referred to are Madeira or English Walnuts, which we found to be excellent. We almost envy the lady the profound pleasure she must experience in the consciousness of having planted the nuts which produced these trees. Let every body, even the children, plant a tree; and if they can not plant a tree, let them plant nuts.—ED.]

MR. EDITOR:—An effectual remedy for the ravages of the *Curculio* on Plums, Apricots, and other fruits has at last been discovered by Mr. Wilson King, of Erie, Penn. It is this: smoke the trees from the earliest blossoming till the young fruit is the size of a common bean, (say six weeks,) with Coal Tar; smoke in a calm evening once in four days, ten seconds to each tree.

I buy at the gas works a barrel of the Coal and Gas Tar for $1.50; and in the evening twilight, with a common foundry moulder's ladle containing two quarts of this tar, ignited with a match, I smoke one hundred trees (a few seconds to each tree) in half an hour; and not only curculios, but caterpillars, and every thing of insect kind, are completely driven away. I have now tried it two successive seasons, and not a kernel of my fruit has been stung. Several of my neighbors, members of the Erie County Agricultural Society, at my instance, have applied the smoke to one tree and left another near it unsmoked, and in every instance the fruit of the smoked tree was saved and the unsmoked lost. Through your widely circulated HORTICULTURIST I desire to present this remedy to the public, satisfied that it is complete.

Very respectfully, WILSON KING.

[In view of all the remedies proposed, the little Turk would seem to be destined to have little peace. We wish the little wretch would take it into his head to get disgusted, and leave for parts unknown, and never to be known. If he can stand the smoke of gas tar, it is more than we can; but then he has all the lives of a cat nine times multiplied.—ED.]

THE GARDEN OF AMERICA.—MR. EDITOR: In early colonial times Long Island was called the "Garden of America," and was far-famed for its fertility and productiveness. The settlements on it were made at an early period, on both shores, on the east end and west end of the island, as the beautiful bays and harbors presented desirable places for settlement, and it was these shore settlements that gave to the island its great reputation; and it is a most extraordinary fact, that no great change has been made in the towns, villages, and hamlets since 1683—or

possibly some changes may have been made from that period to 1750. Most men suppose, or it has long been the impression upon the public mind, that the whole island is settled, or that all the land on it that could be cultivated, or can be cultivated, has long been cultivated or occupied. This is the general inference from the fact that it is the oldest settled part of the State of New York, off from the island of New York, and its proximity to the city, and the great facilities which Long Island affords for market. But this is a mistake; and it may surprise your readers to know that nearly one-half of the geographical surface of this most beautiful and highly favored island is yet a wilderness, and also to know how vast a "*wood-lot*" belongs to this old "Garden of America." The great central regions of the island are yet a wilderness—nearly as much so as in the days of the Indians, two hundred years ago; the wild deer yet roam "o'er these valleys and plains." Here, in the middle or central portion of the island, is a vast forest of more than forty miles in length from east to west, and from six to eight miles wide from north to south; and until within a few years there was not a single acre nor rod of cleared land, nor house, nor sign of a human habitation. A vast, lonely, and desolate wilderness, with no roads through it, or none that would be called roads in any other country, though traversed in every direction by *paths* or single tracks, just wide enough for a wagon to be drawn through the trees and bushes—they might be called *mono-tracks;* yet these passages or paths have been used as highways from village to village, from one shore to the other, for one hundred and fifty to two hundred years; and, as a general rule, during this long period of use, no labor or cost of consequence has been required to keep these paths passable. The roads in no other part of the State of New York could be kept passable for the same length of time, and by the same means, for it is, in fact, the finest road-bed that can be found any where. The question is at once asked, Why is it that this great tract of land—for it is land, real "*terra firma*"—thus remains neglected and unoccupied? Common fame answers, and says, "It is barren, worthless, and can not be cultivated." But this is not true. This great part of the island is geologically and naturally equal to any other portion of it of like extent. No facts have ever been shown to sustain the old notion of the barrenness and sterility of these neglected island lands; no examination of the land or soil has ever been made; no attempts to cultivate it, nor any part of it, have ever been made; in truth, no test whatever has ever been applied to it to show wherein it differed from all the rest or any other part of the island; and nobody knows of any of these things having ever been done. If so, let the facts be furnished; name the place, the time, and the men who have, by actual trial and test, ever shown the land to be barren. If there be any such men in existence on the island, or ever have been, let their names be given, and let the process be given, and the facts carefully set forth, as performed to test the productive quality of the land; then the public can judge whether the tests and trials have been sufficient to abandon, to throw out of use, and doom to perpetual sterility, more than a quarter of a million of acres of land in the ancient "Garden of America;" land, too, spread out at the very doors of these great cities, New York and Brooklyn, and with a climate for health and pleasure unsurpassed in this latitude. The late Benjamin F. Thompson, author of the History of Long Island, when asked for the facts upon which that portion of his history was founded, where he described that great central part of the island as "a vast barren plain," said he had none; that he knew of no attempts ever having been made to cultivate any of the land. The truth is, it is one vast garden by nature, though now a neglected bramble-field; "briars and thorns cover the face thereof," from long neglect, repeated cuttings of its wood, and by burnings. It was every where covered with a heavy growth of wood or woody products, and is now so densely covered with bushes, grasses, brambles, and young trees, that it is almost impossible for a man to get through it; indeed, he can not walk over large tracks of it out of the old cord-wood roads, or the *mono-tracks* heretofore described. There are none of the external attributes or appearances of barrenness or sterility on this great island wilderness. Not an

acre of land—scarcely a square rod of land, can be found between Brooklyn and Carman's River, the famous trout stream, a distance of sixty miles, that is not covered with heavy, rank vegetable matter, each acre requiring the removal of from twenty to forty tons of roots to clear it. No land that contains and sustains such a growth of vegetation and vegetable matter from year to year can be barren, nor possess any attribute of barrenness. The same elements in the soil that will produce such an annual crop of vegetation, in the form of trees, shrubs, grasses, wild fruits, and wild vines, will, when subdued and submitted to the agriculturist and horticulturist, produce wheat and corn, and garden plants of every variety. There are thousands and tens of thousands of acres of the very finest of garden lands in these great tracts now totally wild; around the head waters, and along the borders of those beautiful island streams that rise in these central woodlands, there are hundreds of acres of the finest celery land. The entire surface of the tract between Brooklyn and Yaphank, or Carman's River, is covered with a fine, warm, genial soil, what in any other country would be called a yellow loam, and in its mechanical texture and friability is in the very best possible condition for culture, and to receive plants, seeds, and fertilizers. None of the land is any more sandy or gravelly than the lands of Flatbush, Flatlands, and Jamaica. HORTUS.

DEAR SIR:—Being a careful reader of the HORTICULTURIST, and observing that you devote much of your valuable space to the very important subject of Grape culture, I take the liberty of addressing you with the hope of obtaining information on some points connected with that subject.

I live in Toronto, C. W., and have been for some time endeavoring to produce *ripe* grapes in the open air, but so far with very little success.

In May, 1859, I removed the earth from my vines, and nailed them up to a close board fence, ten feet high, facing the south. They were pruned on the "Long Rod" system, had been two years planted, and this (1859) the third season I concluded to let them bear a small crop. They broke beautifully, and by the fourth of June had made eight inches of growth, showing a profusion of young bunches. But on the morning of the fifth I found the vines quite destroyed by the frost of the past night. I at once cut them back to six inches of the ground, and at first I feared they would bleed to death; but by the first of July they had all thrown out good shoots, and in October I had strong, well-ripened canes ten feet long.

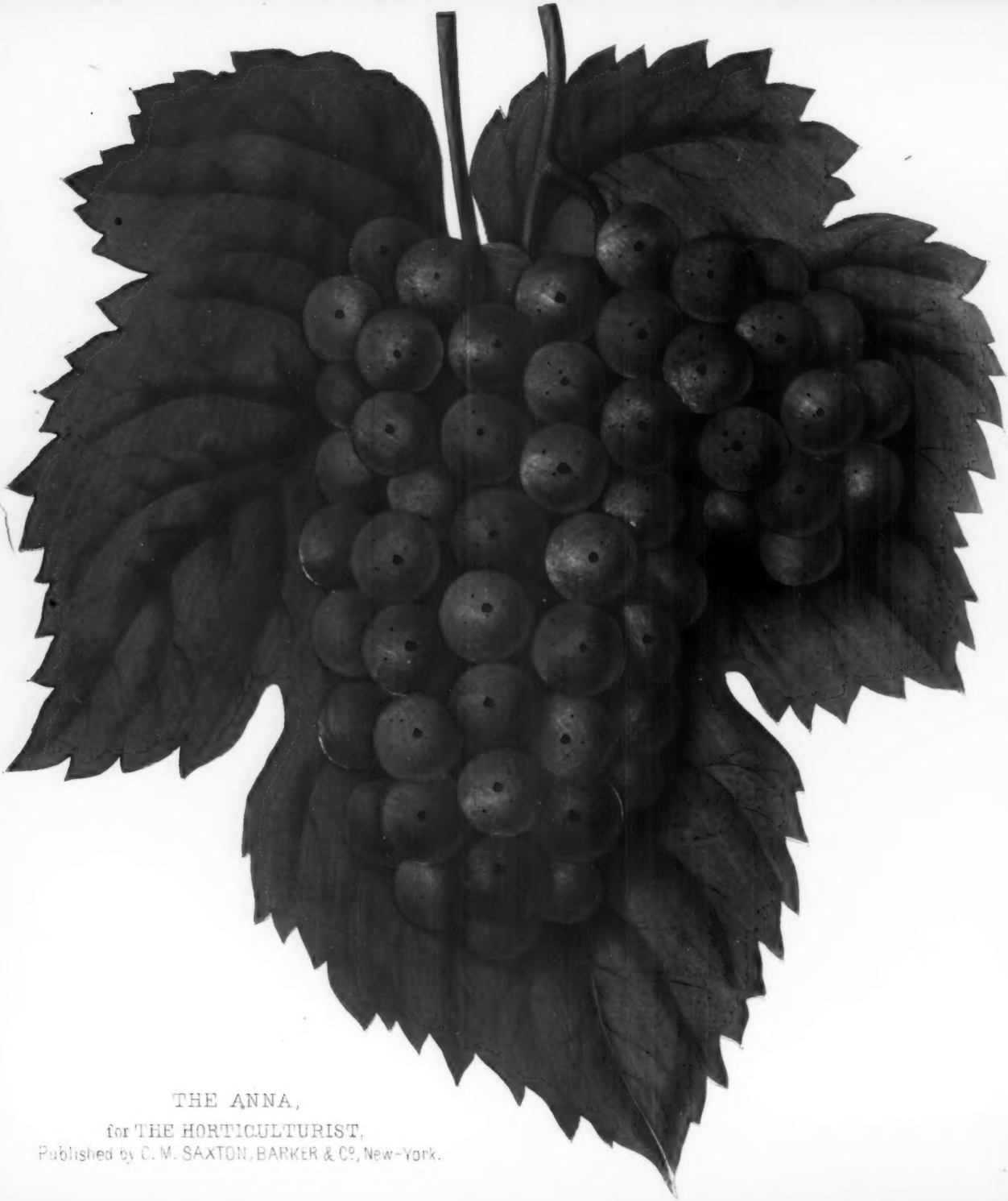
The spring of 1860 was very favorable, and the vines set their fruit well; but on the last day of September none of the bunches of the Isabella or Catawba were ripe, and the frost of that night rendered them quite worthless. I had previously gathered the fruit of some Clintons, which were quite ripe, and made them into wine. These vines were all on the same line of fence, and had every advantage: the border was twelve feet wide; a fine, deep, light loam, well manured, well drained, and hoed four times during the summer, no other crop being planted on it; a constant system of stopping the fruiting shoots was observed.

Now am I to conclude from this result that the Clinton is the only vine suitable to this latitude? It is a very large bearer, but the fruit is small and not fit for any thing but making wine. I should like to try some of the new grapes if I thought I had any prospect of success.

As a rule, Indian corn of all kinds will ripen in our gardens here, but last summer some early Sweet corn which I planted did not ripen a single ear. The season was the coolest I remember, and we had not one sultry night.

Hoping that I have stated my case in an intelligible manner, I remain, yours truly,
Toronto, C. W., Feb. 20, 1861. ALPHA.

[We regret that the above, as well as others, should have remained so long unanswered; but for some time past we have been laboring in the midst of a Babel. Your case is very clearly stated. It would seem that every thing in the way of cultivation has been well done; but, with the varieties of grapes you have, the result would have been unsatisfactory if you had lived in a much more genial climate than Canada West. We think we can safely encourage you to go on. The Clinton is nowhere fit for the table. Abandon that, as well as the Isabella and Catawba; the latter is unsuited to your latitude. In their place put the Delaware, Diana, Concord, and Hartford Prolific. We have no doubt they will all ripen their fruit with you; at least with the slight protection we shall soon illustrate in one of our grape articles, which we hope you will read. Do not nail your vines *to* the fence, but have a space of six inches or a foot between the fence and the vines. We shall be very glad to help you.—ED.]



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